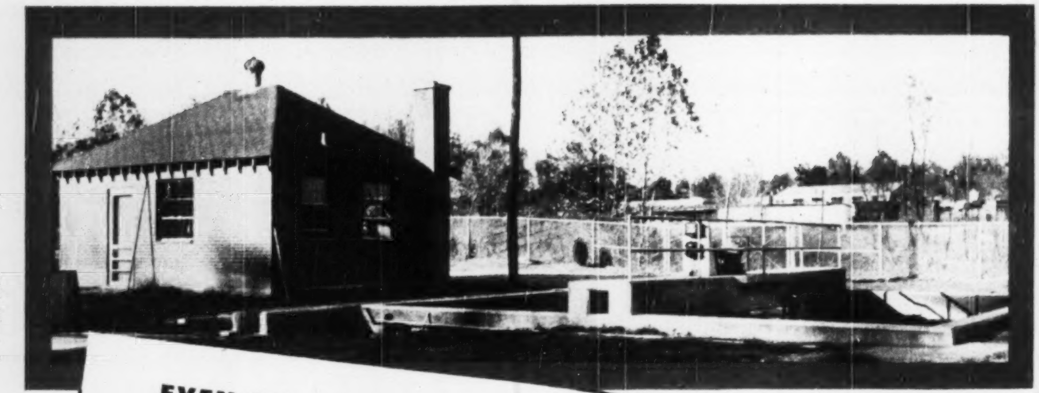
ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION



EVEN THE SMALL COMMUNITY CAN HAVE A MODERN SEWAGE TREATMENT PLANT PROTECTED BY BYERS WROUGHT IRON

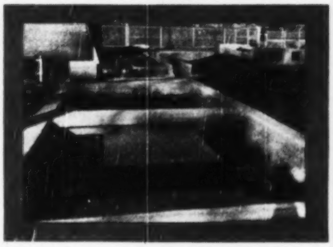
Small in size but completely modern in every detail, the new Webster-Crestwood Sewage Treatment Plant, St. Louis County, Missouri, was developed and is owned by Russell & Company, Inc., operating engineers. It serves portions of Webster Groves, Crestwood, and a section of St. Louis County, Missouri. The ultimate design is to handle sanitary flow from 1400 acres. The present plant is flexible in design and construction and can be expanded as the requirements demand. Russell & Company, Inc. made extensive use of wrought iron in the various "hot spots" where severe corrosion is always encountered. Byers Wrought Iron pipe was used in sludge pump piping and return pump piping. Byers Wrought Iron hot rolled material was utilized in the weir plates; diversion gates, and run-off channel gates.

You can't get away from corrosion in any sewage treatment plant —but you can keep corrosion from getting away from you, and loading the installation with back-breaking maintenance and repair expense. Wrought iron has been used in practically all of the trouble-spots in modern plants, and has proven its superior corrosion-resistance many times over. You'll find it profitable to investigate the record it has made, as a guide in your own construction and maintenance work.

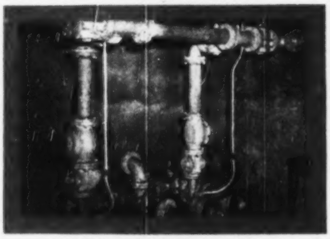
The reason why wrought iron has made such an unusual showing is found in its unusual composition and structure. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron halt and disperse corrosive attack. This discourages the pitting and rapid penetration that generally causes premature failures in vulnerable materials. The fibers also help to anchor the initial protective scale, which shields the underlying metal.

You will find some helpful information on the use of wrought iron in sewage plants in our bulletin, WROUGHT IRON FOR SEWAGE TREATMENT AND DISPOSAL INSTALLATIONS. If you have a problem in connection with some particular service, we will be glad to supply a report of user experience with wrought iron under similar conditions.

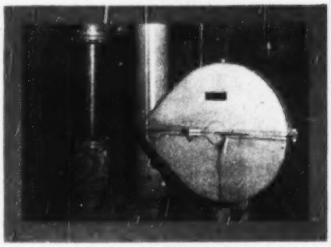
A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.



Wrought iron weir plates



Wrought iron piping to intermediate return pumps



Wrought iron sludge pump piping

CORROSION COSTS YOU MORE THAN WROUGHT IRON

BYERS
GENUINE WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS
ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

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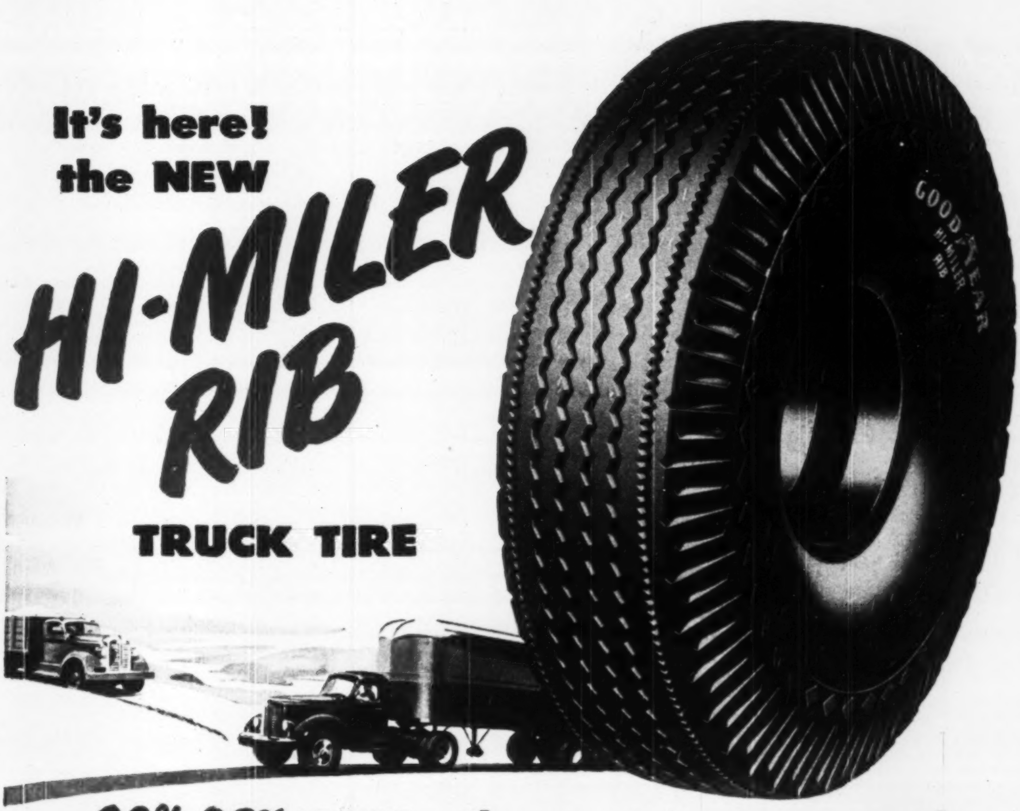

20%-25% MORE mileage at no extra cost!

Now Goodyear presents a great new truck tire that will give you more mileage, more traction, more safety in today's highway hauling service. Improved throughout, this new Hi-Miler Rib Truck Tire delivers *premium performance at no extra cost!*

HERE'S WHY

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Most for your money—highest quality construction throughout. New tougher, cooler-running rubber compounds, super-strong rayon cord body, spiral-wrapped dual beads all combine to make the new Hi-Miler a tire that will give you greater mileage and more recaps with far greater freedom from blowouts and road failures. Get it now—at all Goodyear dealers'.

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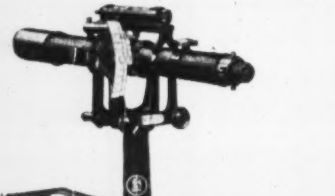

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ENGINEERING NEWS-RECORD

VOLUME 144 **MARCH 16, 1950** **NO. 11**

WALDO G. BOWMAN
Editor

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Number of copies of this issue printed 44,967

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Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

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March 16, 1950 **ENGINEERING NEWS-RECORD** Vol. 144—No. 11

Publication Office 99-129 N. Broadway, Albany 1, N. Y.

Executive and Editorial Offices 330 West 42nd St., New York 18, N. Y.

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Published every Thursday by the McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder; CURTIS W. McGRAW, President; WILLARD CHEVALIER, Executive Vice-President; JOSEPH A. GERARDI, Secretary and Treasurer; EUGENE DUFFIELD, Senior Vice-President, Publications Division; NELSON BOND, Vice-President and Director of Advertising; J. E. BLACKBURN, JR., Vice-President and Director of Circulation. Cable address, "McGraw-Hill New York."

Subscriptions: (1 yr., 2 yr., 3 yr.) U. S. and possessions $6, $9, $12; Pan America, $10, $16, $20; Canada, $8, $12, $16; All others, $20, $30, $40.

Address all communications about subscriptions to Director of Circulation. Price 35¢ per copy.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

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a lucky number

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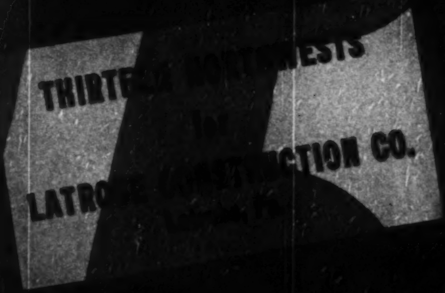
When you buy a Northwest you have a *real Rock Shovel* and when you have a real Rock Shovel you are assured of *output* in any digging.

There is no better guarantee of the type of service that you are looking for than the repeat orders for Northwests placed by successful and satisfied users. Ask them! Then ask us for full details.

Make your number a Lucky One with a Northwest.



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A REAL ROCK SHOVEL
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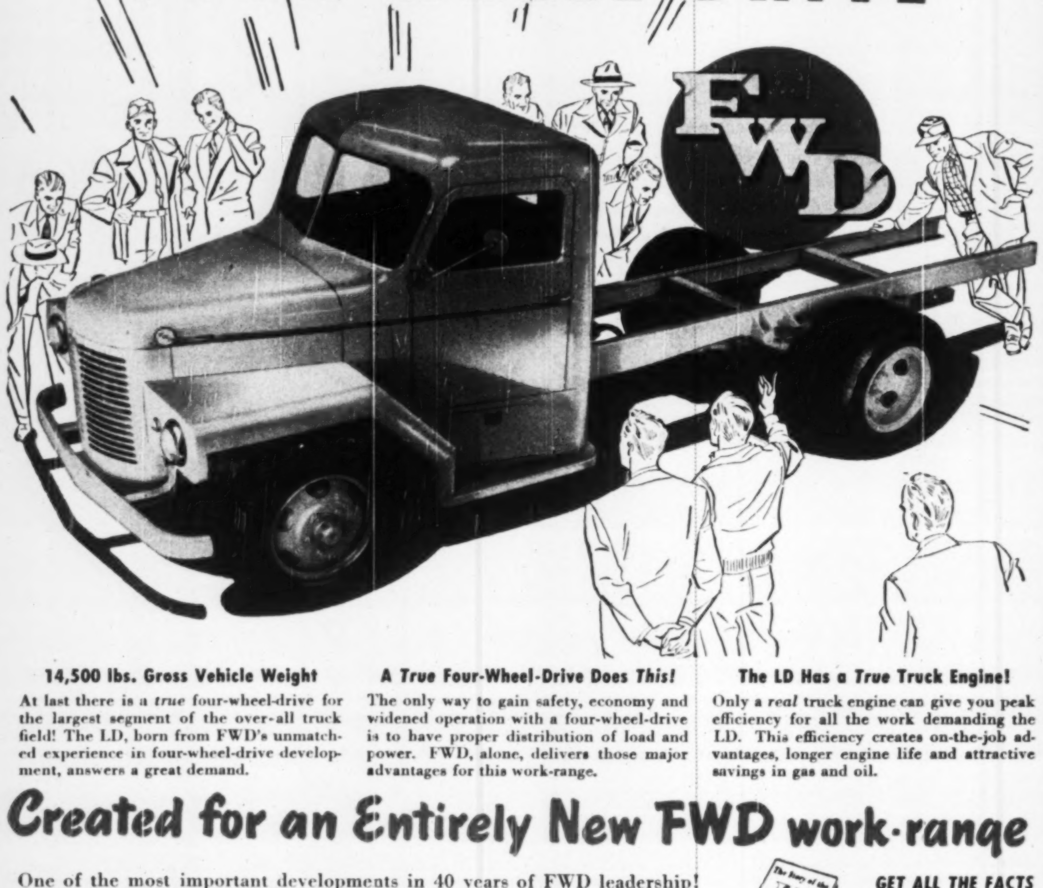
Here's how the LD fills the bill for a LIGHT-DUTY FOUR WHEEL DRIVE



14,500 lbs. Gross Vehicle Weight

At last there is a *true* four-wheel-drive for the largest segment of the over-all truck field! The LD, born from FWD's unmatched experience in four-wheel-drive development, answers a great demand.

A *True* Four-Wheel-Drive Does *This!*

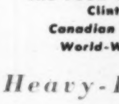
The only way to gain safety, economy and widened operation with a four-wheel-drive is to have proper distribution of load and power. FWD, alone, delivers those major advantages for this work-range.

The LD Has a *True* Truck Engine!

Only a *real* truck engine can give you peak efficiency for all the work demanding the LD. This efficiency creates on-the-job advantages, longer engine life and attractive savings in gas and oil.

Created for an Entirely New FWD work-range

One of the most important developments in 40 years of FWD leadership! Here is a completely new four-wheel-drive . . . designed to broaden the range of operation in the light-duty truck field. Now you can have a *true* four-wheel-drive to completely fill the needs which *conversions* and conventional trucks have sought to answer. This new model — the LD — fulfills countless requests for an FWD in that broad field.


The Story of the LD

GET ALL THE FACTS
on the LD! Ask for this folder, "The Story of the LD". See your FWD distributor or write FWD.

THE FOUR WHEEL DRIVE AUTO CO.
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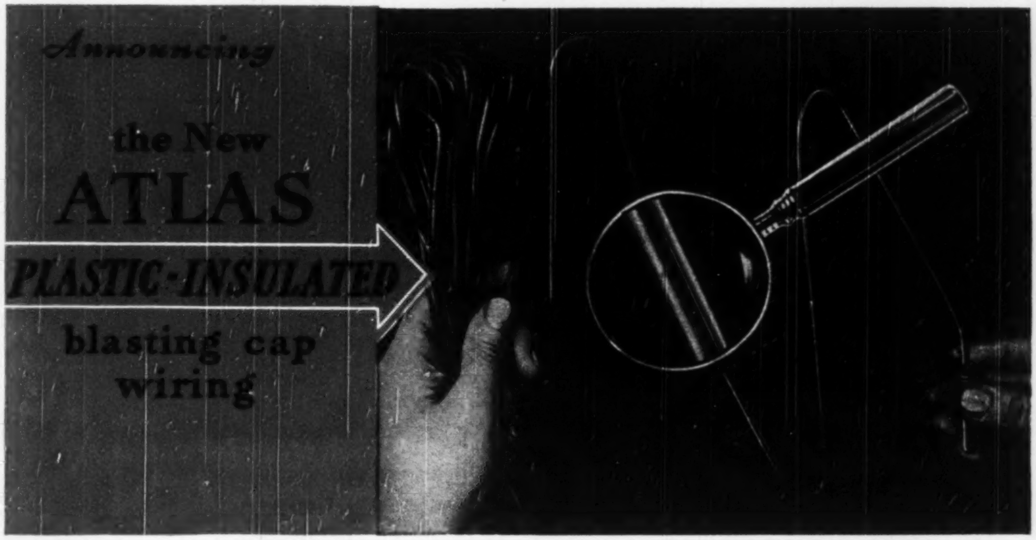

Designed for roughest field conditions... to meet the most exacting demands of blasters

Hundreds of good plastic insulating compounds were tried and rejected by Atlas Research before the new Atlas plastic-covered wire was developed. Our wire had to measure up to the most rigid demands of men who use electric blasting caps under every conceivable condition.

If you're one of our many customers who have already tried the new Atlas plastic-covered leg wires or connecting wire, you'll agree that this wire comes up to the highest expectations—and more! Here's why:

① ***It's really tough—and truly waterproof!*** Thick plastic covering, made to withstand rough handling in jagged bore holes. Fully waterproof. Extremely high insulating value.

② ***Less kinking and snarling!*** With minimum care, it folds or reels out without tangles or kinks—saves time and tempers in hooking up.

③ ***Flexible at 20° below zero!*** Made to withstand Arctic or Tropic weather.

④ ***Easy on eyes and hands!*** No eye-strain to see the brilliant orange or yellow wire, even in dull light. No rough edges when duplex wire is separated into single strands.

⑤ ***Stands up to rigid tests!*** Compare it with other wire for these outstanding properties; and also for high tensile and compression strength; resistance to deterioration from weather, rodents, vermin.

Now available in duplex on all Atlas Manasite electric blasting caps with wires 30 feet long or more. Two single plastic-covered wires on shorter lengths.

Another outstanding contribution to explosives progress by the makers of ROCKMASTER, the original split-second delay blasting system.

ROCKMASTER, MANASITE: Reg. U.S. Pat. Off.

ATLAS EXPLOSIVES
"Everything for Blasting"

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STANDARD ENGINEER'S REPORT

DATA

LUBRICANT R.P.M. Delo Oil

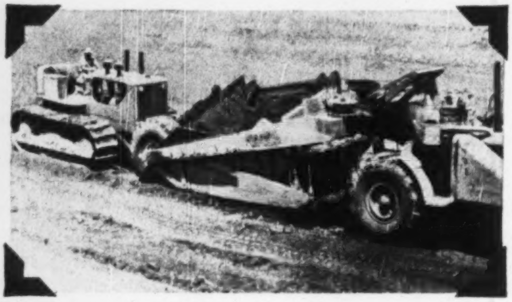
UNITS 148 Diesel engines

CONDITIONS Heavy-duty service 24-hour operation

PERIOD 13½ months

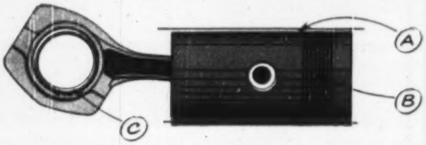
JOB L. A. Airport Extension

Engine-cleaning oil cuts "down time" in half!



LUBRICATED WITH RPM DELO OILS, more than 100 heavy-duty engines like these were pushed to full capacity around the clock. They finished the greatest earth-moving project in the West 150 days ahead of schedule! RPM DELO Supercharged Oil kept parts lacquer-free and reduced wear so that time out for repairs was reduced 50% under that necessary when using ordinary heavy-duty oils.

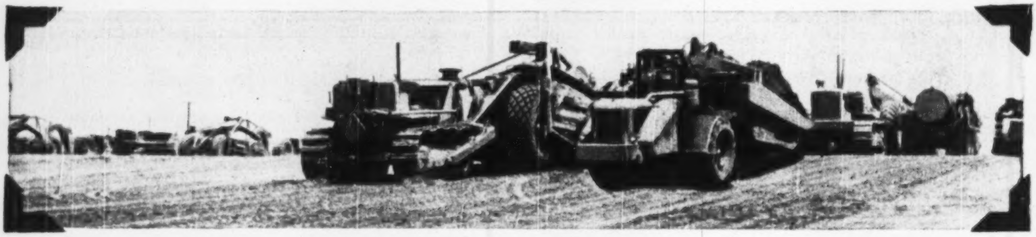
How RPM DELO Oils reduce wear, corrosion, oxidation in Tractor, Truck, and other Heavy-Duty Engines



A. Contains special additives that provide metal-adhesion qualities . . . keep oil on parts whether hot or cold, running or idle.

B. Anti-oxidant resists deterioration of oil and formation of lacquer . . . prevents ring-sticking. Detergent keeps parts clean . . . helps prevent scuffing of metal.

C. Special compounds stop corrosion of any bearing metal and foaming in crankcase.



HEAVY-DUTY DIESEL AND GASOLINE EQUIPMENT, owned by 8 contractors, moved over 12,000,000 cubic yards of earth on this cut and fill job—an extension to the Los Angeles Airport — in 13½ months! General Contractors are N. M. Ball & Sons, Berkeley; Harms Bros., Sacramento; H. Earl Parker, Inc., Marysville; Subcontractors, Lewis & Queen, Fresno; Louis Biasotti & Son, Stockton; Baker Bros., Chico; Gunner Corp., Pasadena; and Far West Construction Co. All used Standard Oil Company of California products 100%.

REMARKS: RPM DELO Oils are designed to meet every heavy-duty engine need: RPM DELO Heavy Duty, RPM DELO Special, RPM DELO Supercharged-1 and RPM DELO Supercharged-2 Lubricating Oil.

RPM DELO LUBRICATING OILS

FOR MORE INFORMATION about the proper grade of the new RPM DELO Oils to fit your particular requirements, or the complete line of RPM Lubricants, and the name of your nearest "RPM" Distributor, write or call any of the companies listed below.

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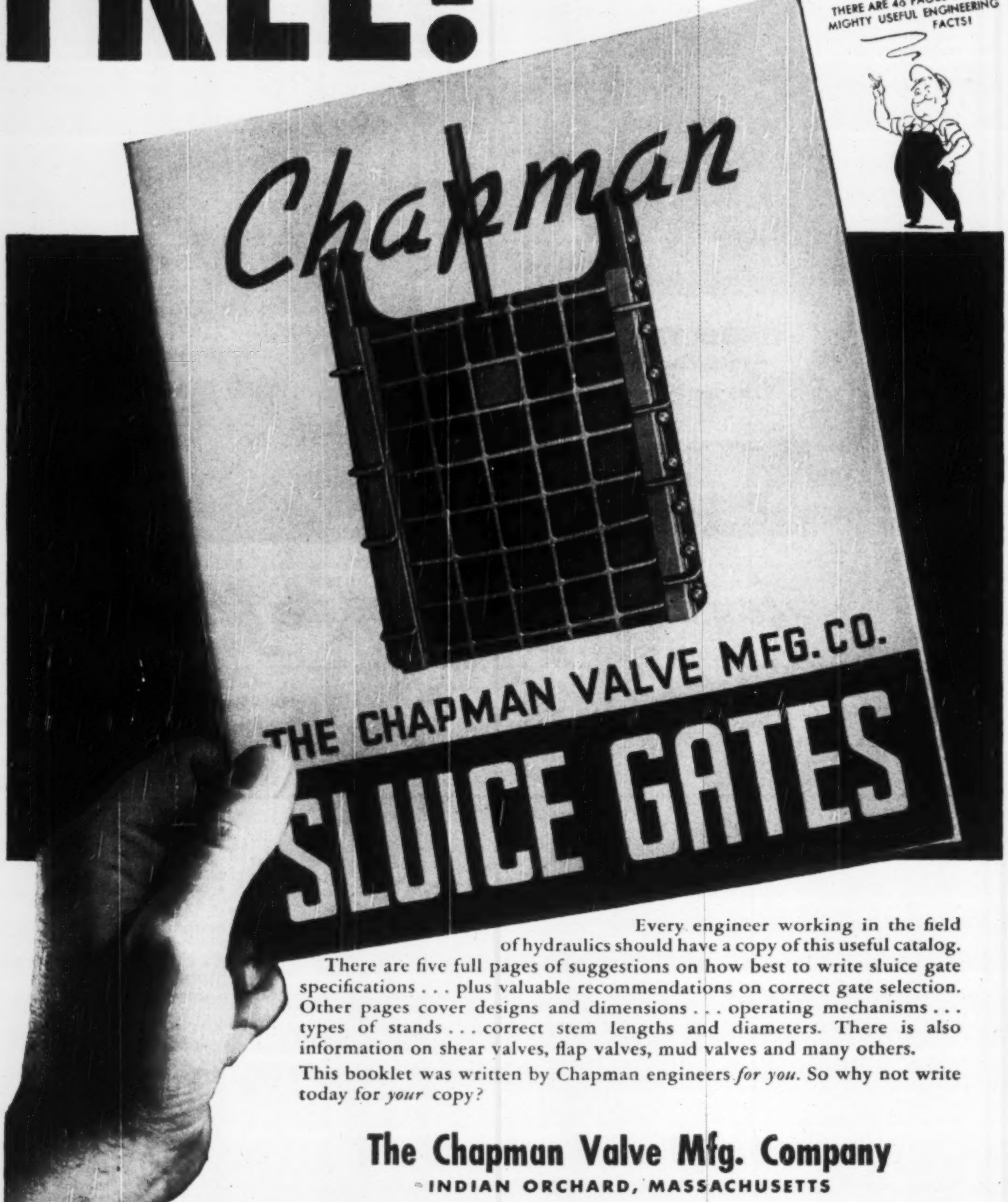
...THIS PRACTICAL BOOKLET ON SLUICE GATE DESIGN


THERE ARE 46 PAGES OF MIGHTY USEFUL ENGINEERING FACTS!
Chapman
THE CHAPMAN VALVE MFG. CO.
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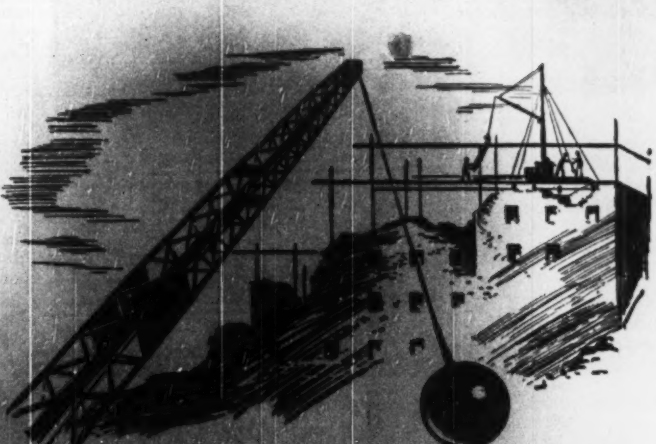

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No finer rope has ever been made, and its basis is "Blue Center" steel—an exclusive Roebling development. Its high resistance to abrasion, shock and fatigue spells long life . . . To this, Roebling *Preforming* brings the further advantages of new handling ease and improved performance . . . And the addition of I.W.R.C. assures top resistance to operating pressures and provides increased rope strength.

Roebling makes a wire rope of the right construction, grade and size for every type and make of rope-rigged equipment. Have your Roebling Field Man recommend the best rope for low-cost performance on each of your installations.

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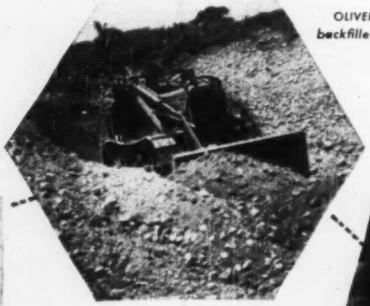
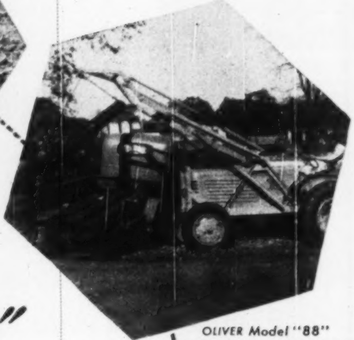
JOHN A. ROEBLING'S SONS COMPANY, TRENTON 2, NEW JERSEY

OLIVER HG Crawler Tractor with Ware Loader loading sand into truck.



OLIVER HG Crawler Tractor with Ware backfiller blade attached to shovel arms.



OLIVER Model "88" Wheel Tractor with Ware Boom handling cast iron pipe.

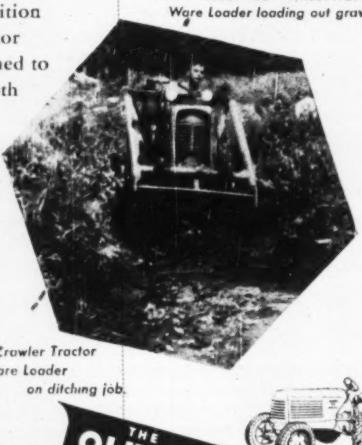
... take the "Load" out of Your Loading Problems!

OLIVER Model "88" Wheel Tractor and Ware Loader loading out gravel.

Whatever your loading problem, the easy, economical answer is an Oliver Crawler Tractor or Oliver Industrial Wheel Tractor and Ware Front-End Loader.

These powerful tractors and the hydraulically operated loaders are easy to operate . . . easy on maintenance and operating costs. Lift and bucket are hydraulically controlled. Hydraulic control of bucket assures greater breaking-out action and full loads . . . prevents wasteful spillage. "Midsection" pivot allows longer reach of dumping position and distributes the weight advantageously over the tractor frame to minimize strain. The hydraulic rams are designed to take most of the shock loads, assuring longer life for both tractor and loader.

And, the tractor-loader unit can be quickly converted to backfiller, boom or lifting fork. Special buckets are available for coal, snow or humus loading. The hydraulic system can be used to power other equipment such as mowers, sweepers, etc., in combination with the loader. For all the facts, see your local Oliver Industrial Distributor, or write direct to:



OLIVER HG Crawler Tractor with Ware Loader on ditching job.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of Industrial Wheel and Crawler Tractors

THE OLIVER CORPORATION

"THE SIGN OF EXTRA SERVICE"

NEWS BRIEFS

Quick Water Supply–Ohio's Mahoning Valley Sanitary District will virtually double its water supply if the court approves an agreement it has reached with the federal government. The plan calls for use of the Berlin reservoir as an auxiliary supply for Youngstown and Niles. The court must approve a plan whereunder the district will build a large diameter pipeline to lift water from Berlin over a divide and into Meander Lake. Cost is expected to run to about $5,000,000.

Is It or Isn't It?–Engineering and economic feasibility of the proposed Fallbrook Dam, in northern San Diego (Cal.) County, will be determined this year, according to Reclamation Commissioner Michael Straus. The structure would impound 200,000 acre-ft of water and would serve the Fallbrook area and Camp Pendleton. Financing would be 75 percent federal, through the Navy (65 percent) and California's federal flood control allocation (10 percent). The Fallbrook Public Utility District would pay the remainder.

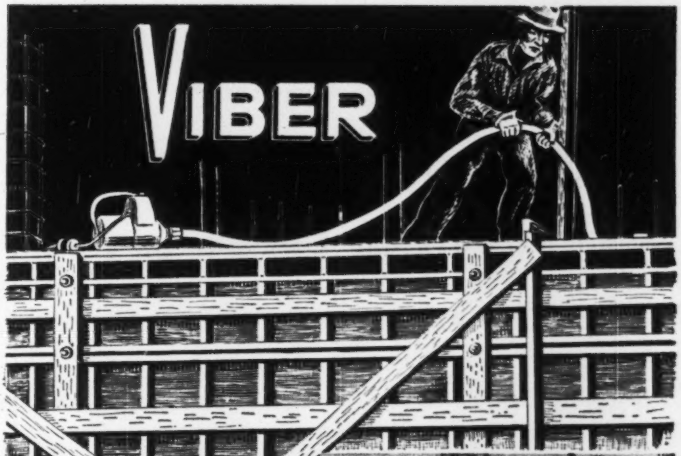
The Personal Touch–North Carolina's Gov. Kerr Scott has launched a series of meeting designed to stimulate interest of State Highway Department employes in his road program. From 10 to 15 meetings are planned.

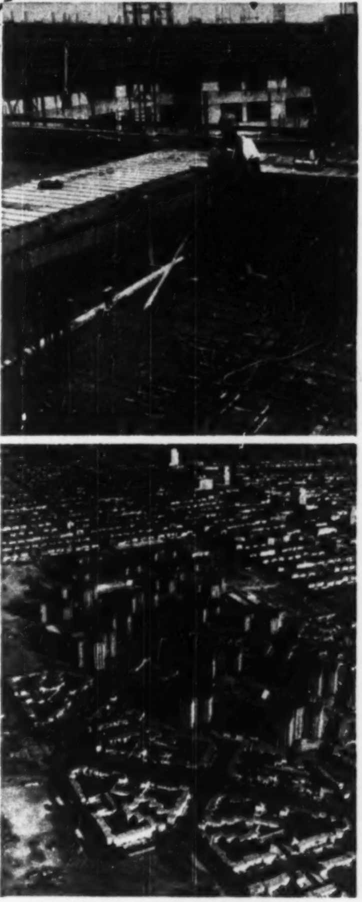
Correction–Dam 1 on the Ohio River is 4.7 mi below Pittsburgh, not 417 mi, as reported on page 34, ENR March 23.

Bomber's Delight–Brig. Gen. Ralph Cowgill, engineer for the Oregon Military Department, objects to Highway Department plans for a bridge across the Willamette River at Salem paralleling and one block away from one now in use. He says an enemy could knock out both structures with one conventional type bomb, and adds that the Pacific Northwest is potentially too much of a front line territory to take unnecessary military risks.

Cities in Peril–Ribbon slums are being created along main highways by the development of sub-standard housing along them. And cities are facing residential decentralization and a federal centralization of control and taxation, according to Ralph T. Walker, president of the American Institute of Architects. He said the decentralization faces cities with increased costs, without proper use of existing facil-

(Continued on page 12)





$40,000,000 Parklabrea Housing Project, Los Angeles

Now in use on one of the largest architectural concrete construction jobs in the United States

New architectural and engineering techniques are being pioneered on the Metropolitan (Parklabrea) Housing Project in Los Angeles.

VIBER SELECTED... One of the five unusual features of this tremendous project is an effort to reduce time, effort and costs in concrete placement operations. The exclusive use of Viber equipment on a project that is testing new construction methods and techniques illustrates the regard engineers and construction men have for this interchangeable line of concrete vibrators.

VIBER RUBBER TIPS... Viber's development of rubber tips has reduced damage to expensive forms.... an important phase of architectural construction costs.

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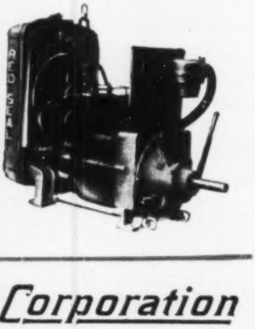

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Continental Motors Corporation
MUSKEGON, MICHIGAN

(Continued from page 11)

ities. That drives cities to Washington for financial aid, he added. As one solution, he suggested establishment of shopping centers and parking areas within cities rather than beyond them or on their edges.

Ontario's Largest—A special appropriation of $150 million—to be used over five years—will be asked of the Ontario legislature this year according to Highway Minister George Doucet. It would finance the largest program of its kind ever contemplated in the province. If granted, these funds would be in addition to the regular annual upkeep and expansion expenditures which now total about $75,000,000.

Airborne Housing—Los Angeles city engineers took to the air recently to survey 74 sites under consideration as parts of a $100 million slum clearance and low rent housing program. The day-long survey was made from a blimp.

THE COVER

Slim, spare, almost painfully neat—and nearly as painfully direct in his ideas and conversation — accustomed to command and to handling men, Gen. Brehon B. Somervell knew he faced certain difficulties when he took over as president of Koppers Co., Inc. (See more of the story on last page of this issue.)

"A lot of people weren't sure whether I had horns, always wore a sabre and would scar the desk with my spurs," he comments with a rare grin. "They seem to believe by now that I leave those things home when I come to the office."

Apparently he's right. There were a few jokes around Pittsburgh's Golden Triangle about how Koppers employees would henceforth stand at attention and wear insignia of rank—particularly when "the General" brought in two other generals (Brig. Gen. Hugh C. Minton and Brig. Gen. T. M. Osborne) to set up a production department and supervise chemical engineering work, respectively.

The stories and the jokes died quickly—nothing has ever come of the predictions. But in less than three years—and over the sort of objections that always arise in an established organization ("We've never done that in the 20 years I've been here")—Koppers has been reorganized into a civilian model of the Army's line-and-staff command.

There's no passing on of letters by endorsement, no typing to prescribed margins. But there is unified control and authority, close checking and integration of operations.

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In other words, the rope with the low price tag may look like a bargain, yet render such limited service that the cost per unit of work is high. On the other hand, a quality rope—costing more at the time of purchase, perhaps—can be a *real* bargain because of the long-term, efficient job it does.

Bethlehem wire rope is a quality product, made by craftsmen in one of the world's finest mills. It is built to give the user *low* cost per unit of work . . . to give him his money's worth and more. You can buy it with confidence; use it with the knowledge that it will serve you long and well.

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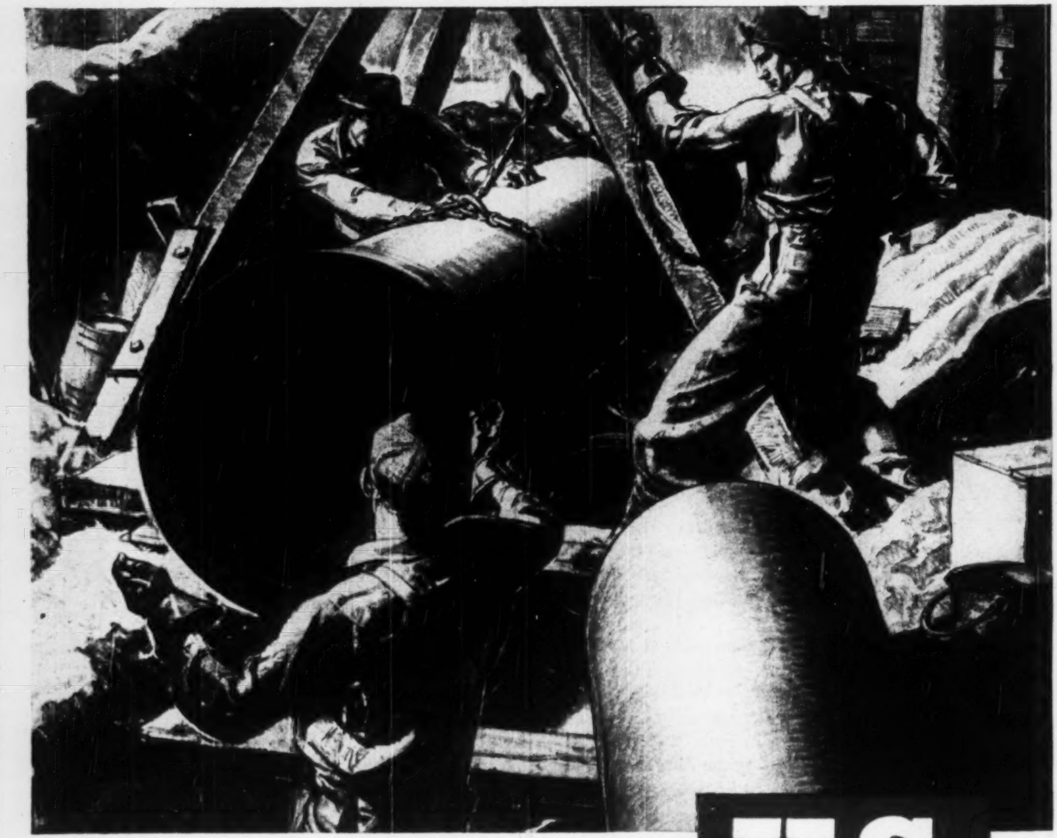

Painted for U. S. Pipe & Foundry Co. by Dean Cornwell

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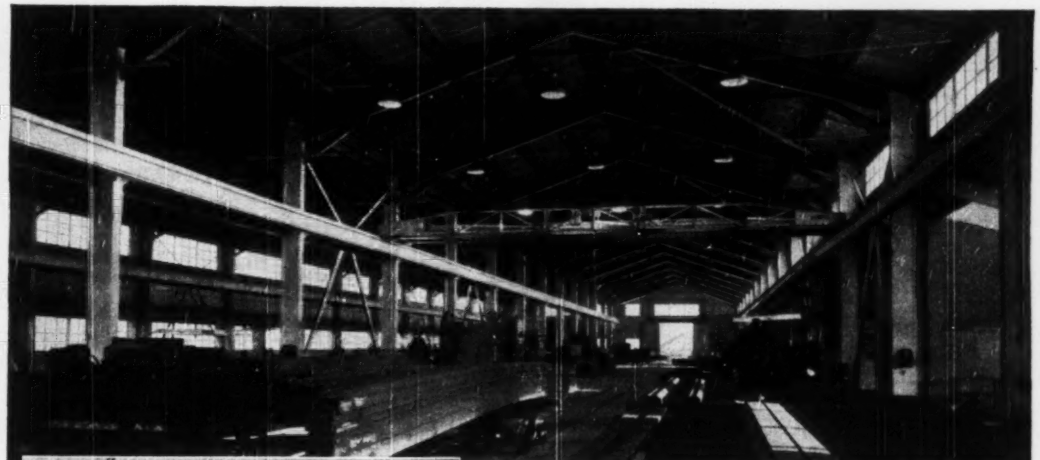
Where can you find a building buy to equal this?



This large steel fabricating plant (interior above) shows how Luria Buildings extend the advantages of standardization to even the heaviest type of industrial structures, which heretofore required special planning and engineering throughout.

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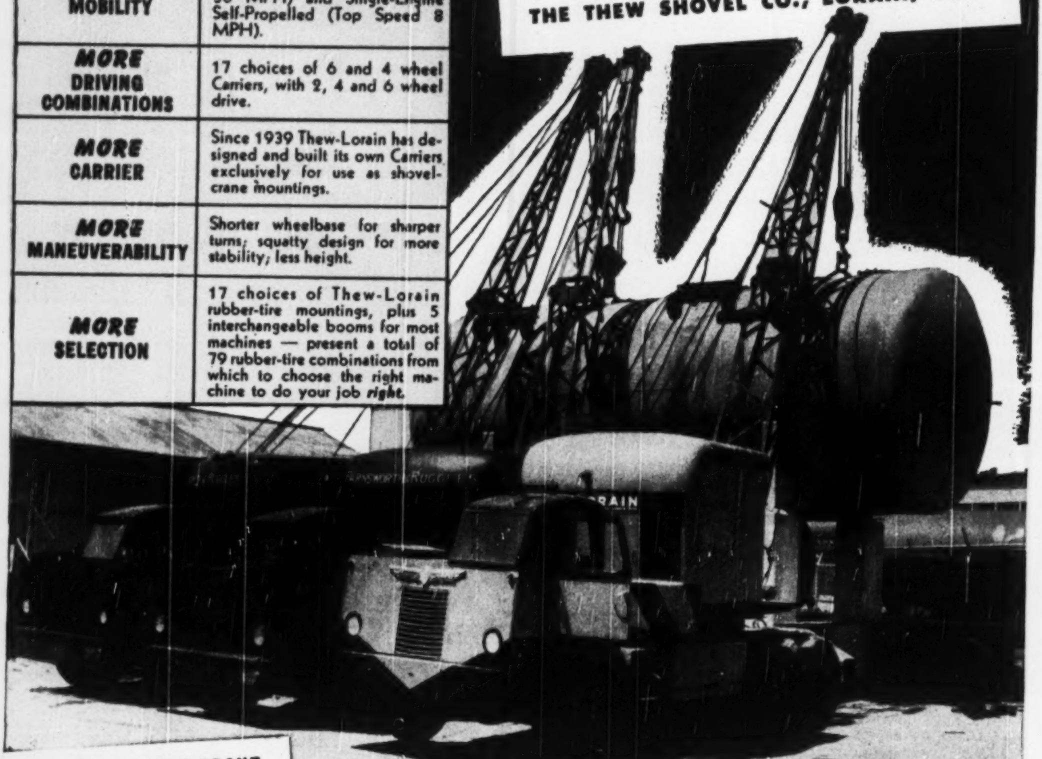

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THE CONSTRUCTION WEEK

WHO'S GOT THE UNDERSECRETARY?—Both AFL and CIO apparently are taking a hand in the contest over who is to become Under Secretary of the Interior. Assistant Secretary C. Girard Davidson got powerful support last week from AFL's President William Green. He wrote President Truman and Secretary Oscar Chapman urging Davidson's appointment, citing Davidson's record on public works programs. Meanwhile, Washington insiders still think that Assistant Secretary John W. Gibson is leading the race for the post. Gibson is former president of the Michigan CIO.

IT'S PROBABLY THE COLOR—Two German engineers have come up with a road surfacing product which they say will soon make "ice-clad highways a thing of the past." The product is a mixture of cement, residue from coal-mine dumps, and a secret chemical. They selected the mine waste because they noted that snow does not remain on the dumps at coal mines. Their surfacing material is said to be stronger than concrete, yet porous, so that rain falling on the surface is absorbed instead of freezing. Knowing how much quicker ice thaws on a black-top pavement, we suspect that the secret chemical is less important in reducing ice formation than is the dark mine waste. What happens when the water absorbed by this porous material freezes is not said.

MORE SCHOOL BUILDING?- 'Vhat may come out of the continuing wrangle over federal aid to education may be a compromise that will mean a great deal to construction. Some observers think an acceptable solution would be some federal plan to sponsor a vast school construction program, through a system of construction grants and loans to the states.

HOUSING FIGHT IS LOCAL—The opposition to public housing is being concentrated on the local level—in the city council chambers. Thus far, five cities—South Bend, Lincoln, Neb., Pasco, Wash., San Jose, Calif., and Tucson—have voted against making use of the federal housing subsidy. But the turndowns don't mean anything on the large picture. Some 400 cities have already moved to get their share. That fact, plus the availability of federal funds, will keep the program going.

HOW'S BUSINESS AGAIN?—Always with an eye on November, a time at which the administration wants the general business level to be feeling no pain, government seers are recasting the business outlook for President Truman. He'll get an optimistic report this time. Washington thinks the coal strike did no permanent harm. It believes later quarters will see first quarter losses recouped. But government men still can't quite believe that the second half will be all clear sailing. They note continuing rise in unemployment traceable to a labor force growing faster than job opportunities —as opposed to strike, seasonal or slump layoffs. And they think steel, auto, building material and home prices are still too high for any long pull, thus face readjustment downward.

PRICE HEARINGS-PRICE FIXING—Wyoming's Senator O'Mahoney is pushing federal regulation of steel prices. The majority on his Joint Economic Committee recommends that steel makers be required to file price boosts with the Federal Trade Commission. At the moment, that would give FTC no more than the right to hold public hearings—(whose headlines sometimes can be very persuasive). But it isn't far from such hearings to outright federal price fixing. This concept. incidentally, fits Washington's growing philosophy that the great big, integrated companies, tops in their industries, should either be broken up or, if that's impractical, then regulated federally.

MILITARY BUILDING CURTAILED—Defense Department has pared its public (not civil) works program for the current fiscal year. It had been planned for $430 million, but it'll be held to "bare essentials" which will cost only $299 million. The economizing hit about 250 small projects—such things as sprinkler systems, air station power plants, etc. The bare bones program which will go ahead will have as its major item $164 million for housing and related work at Okinawa and Alaska. There's $50,000,000 for the radar net, that much more for miscellaneous projects. The Air Engineering Development Center, at Tullahoma, Tenn., is down for $30,000,000, and the long range guided missile proving ground at Banana River, Fla., will get $5,000,000. Comparable program for the fiscal year opening next July 1 also is to be held to $300 million.

PLANT DISPERSAL AGREEMENT—The military, incidentally, has made up its mind on plant dispersal. It's not advocating that entire industries be moved inland. But it does want any new plants dispersed within an area. That might very well mean spotting buildings around a circle of five miles diameter, preferably among hills.

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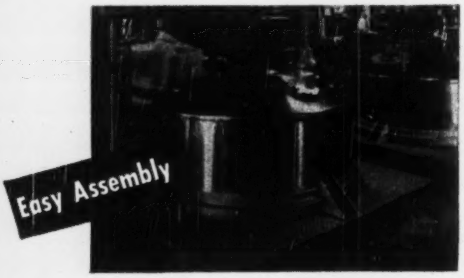

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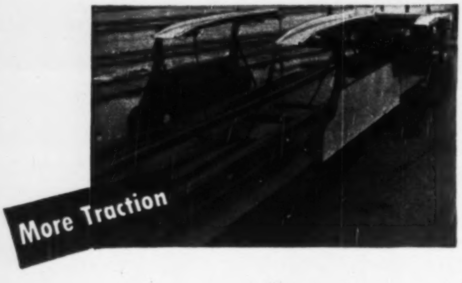

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CONSTRUCTION TRENDS

COMPETITION'S TOUGHER

Competition as fierce as the industry knew in the mid-30's is coming back (ENR March 9, p. 18).

Comments of members reported in the annual survey of the Associated General Contractors show how contractors are feeling the pressure of competition.

Contractors reported lettings on which 30 and more bidders took part. Reports from every section of the country described the competition as ranging from "stimulating" to "fierce," "hellish," and "dangerous." Some contractors reported it to be tougher than they had known in their experience.

With tougher competition has come a continuing increase in worker productivity. More than 90 percent of those surveyed reported increasingly better performance by labor. Productivity is difficult to measure, but at least one contractor reported it at its post-war high.

At the same time, overall efficiency of contractors' organization is up. Contractors are pushing hard to cut down overhead costs and eliminate unnecessary jobs. The survey revealed a marked trend toward smaller profit margins—and this, too, is sparking competition. Contractors in all sections were reported to be figuring bids more closely in trying to keep their equipment and organizations fully occupied.

All this has had an impact on costs. Overall, half of the contractors reported costs stabilized. Some 42% said they were still trending down. Slightly more than 4% reported them unchanged. A little less than 3% believed they would go up slightly.

Contractors reported that building costs—for industrial, commercial, and such large projects—were largely stabilized at a point about 8.5% below their peak. Costs of highway and airport construction averaged 12.8% below their peak with the decline continuing in many areas. Heavy construction costs—railroads, bridges, dams, waterworks—were down about 10%.

On the average, costs were reported 9.9% below their postwar peak. But builders' comments showed that reductions in costs varied widely. A group of Southwest contractors reported overall highway costs down 23% from their late 1947 peak. A Southwest highway-railroad contractor reported that grading costs were down to less than 50% of their postwar peak, concrete structure down 30%, paving down 15%—and the general trend was still downward.

FAILURES RISING

Business failures are on the rise again—but they are still well below what was considered normal before the war.

Last year, according to Dun and Bradstreet, the number of failures in construction was almost double the 1948 record—838 against 439. That compares with 646 in 1939.

Since 1949, however, the number of contractors of all kinds has climbed something like 60%. The increase in failures is only 30%. So the 1949 figure is still favorable by prewar standards.

No one knows exactly how many contractors are operating in all kinds of construction. ENGINEERING NEWS-RECORD's figures on the number of contractors engaged in engineering construction will be reported next week, in the annual review and forecast issue.

The United States Department of Commerce estimates that at the end of 1949 there were 321,000 contractors—and the number is still expanding. This, of course, includes the thousands of small operators, each of whom may build only a few homes during the year. Commerce also found that construction was the field which had grown fastest of all kinds of business since 1939. Then, there were only about 200,000 contractors.

The Associated General Contractors, reported to include the contractors, most of them large, who do 80% of all construction work, has seen its membership swell from 2,300 in 1939 to about 5,500 today.

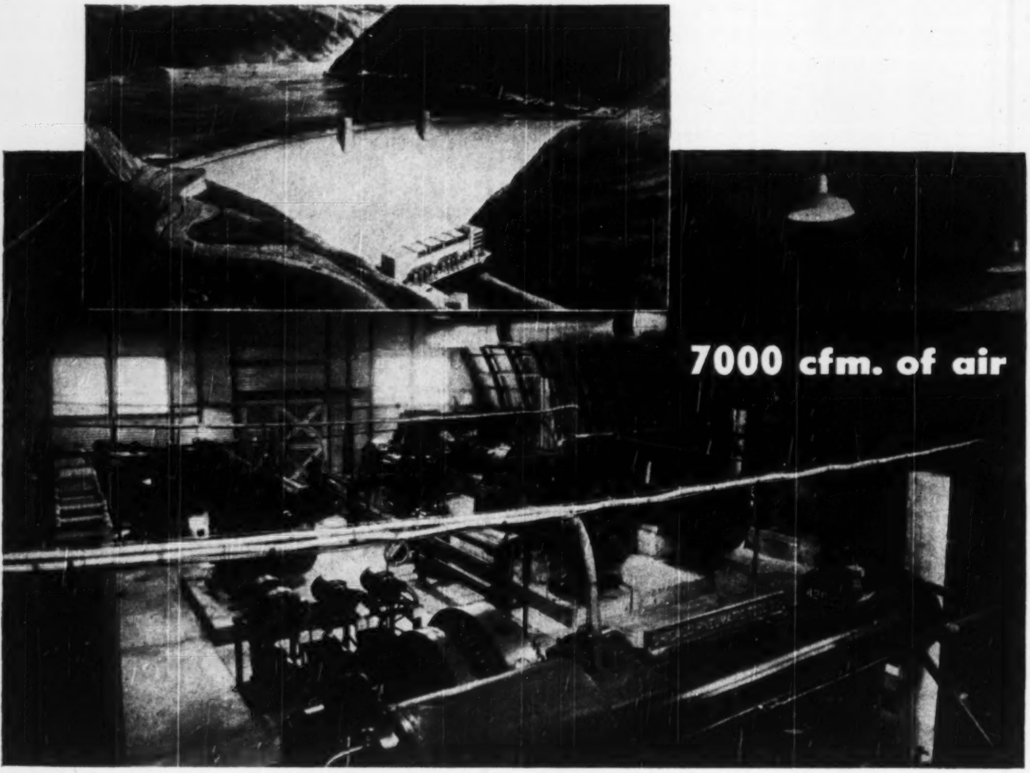
Obviously, the number of failures last year was small compared to the number of contractors doing business. Failures, of course, do not include all those who go out of business. Some firms are discontinued for one reason or another before they go bankrupt. In any case, though, the number dropping out is still far from alarming.

For all business, Dun and Bradstreet records a rate of 34 failures for each 10,000 operating businesses in 1949. That's sharply above the 4 for each 10,000 rate reached in 1945—the war-time low. But the 1949 rate is still less than half of what was called normal over the years from 1909 to 1939. Even in the prosperous 1920's, the rate was 98 per 10,000.

STEEL TO BE SHORT?

Eight months of on and off work in the coal pits may well result in some spot shortages of construction steel in the spring—even though the coal miners went back to work full time last week. The steel industry has not yet caught up on the backlog built up by its strike. Coal shortages limited production in the winter.

Now, with heavy construction setting new records, some contractors may have trouble getting steel. In any case, the pent-up demand for steel probably washes out possibilities of price cuts—may boost prices.



Here's a good example of CP air compressors on a big construction job. At Hungry Horse Dam, gigantic irrigation and hydroelectric project, four Type O-CE and two Type Y Compressors are providing 7010 cfm. of air at 100 lbs. In addition to this stationary compressor plant, the contractors are using six CP Portable Compressors for mobile operations.

In the CP line there is just the right compressor for any construction job. The rugged, heavy-duty, horizontal-duplex Type O-CE is furnished in sizes up to 2000 h.p. The compact, space-thrifty Type Y is available in capacities of 500 to 900 cubic feet per minute, at 80 to 125 pounds pressure.

CP Portable Compressors, gasoline-driven, are available in sizes of 60, 105, 160, 210 and 315 cfm., actual capacity, and in Diesel-driven sizes of 105, 160, 210, 315 and 500 cfm.

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EDITORIALS

Money for Roads

ROAD NEEDS have so far outdistanced the money available to meet them that a major overhaul of highway financing machinery is clearly required. Some efforts in this direction are already apparent, and all plans should be examined with an open mind.

The proposal to increase the federal contribution on the interstate system from 50 to 75% can be supported on the ground that it will enable the states to spread their own funds over more mileage of main highways. But it will also open the door to more federal control, which some states rate more distasteful than poor roads. The use of revenue bonds, to be retired through tolls, can be equally praised and abhorred. General obligation bonds, amortized either by taxes or tolls, are popular with some, opposed by others. Pay-as-you-go financing based on vehicle license fees and gas taxes is adequate for some areas, too slow with results for others.

The dilemma is particularly acute in those states that still divert highway-use taxes to other purposes. New York is a prime example. It has seldom used more than half its road "take" for roadbuilding, and its governor, this year, has proposed to divert all such funds into the general treasury. Bond financing is the natural alternative, but bonds have to be paid off, and some new way of collecting money for that purpose has to be devised. Since a major need is for the 468-mile, $400 million thruway system across the state, the governor directed his attention here, and came up with the idea of an authority to finance the work by special license plates issued to the users. It had earlier been determined that conventional toll collecting would not be practicable because of the great length of the road and the many entrances and exits required. A committee appointed by the governor has endorsed the license-plate idea and recommended an authority to issue bonds backed by the credit of the state. (ENR. March 9, 1950 p. 21)

In the three weeks available between its appointment and the rendering of its report the committee could hardly have gone very carefully into the broad question of road financing. Yet that would seem to be called for on a problem with such far-reaching consequences. The report may aid the governor in getting the legislature to provide the legal basis for establishment of an authority, which may be all to the good. But prudent financial management would now seem to require that the whole question of state road financing be subjected to detailed analysis.

The toll-by-license-plate idea is interesting, but dubious. It may or may not be necessary, if some means can be found to cease diverting highway taxes to other purposes. In any event, New York has exposed its dilemma on road financing, and now should face it squarely with ideas and with searching studies to prove or disprove them.

Numerous other states face the same problem in greater or less degree. If they too would attack it with the vigor and courage that is called for, some satisfactory solutions are sure to be found. Antidiversion amendments, higher license fees or gasoline taxes, revenue bonds, general obligation bonds—all these offer avenues of examination. More money for roads is needed, and it should be obtained under the soundest, most sensible plan that careful engineering and financial studies can turn up.

Chemical Soil Stabilization

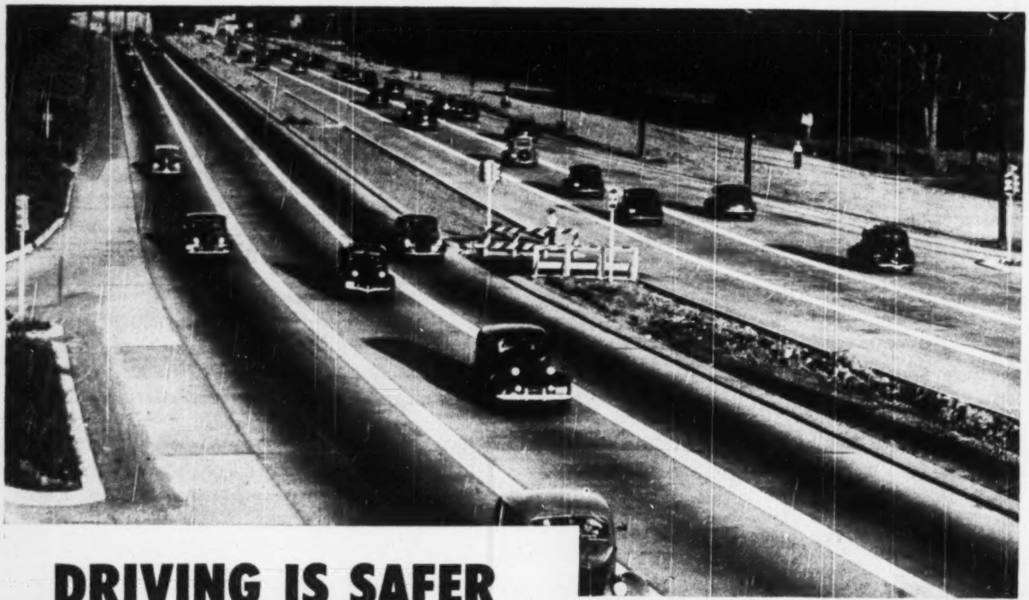
LIKE ALCHEMISTS OF OLD, the soil researchers of today have long sought to make poor soils stable enough to carry highway vehicles or airplanes by in-place treatment with chemicals. Some success was attained with admixtures of asphalt oils, lime or portland cement, but reasonably good soils were required. More recently, some success was obtained with the addition of small quantities of certain types of resins to clay soils to waterproof the molecules, thus preventing the formation of soft mud.

Meanwhile there were persistent reports that laboratories engaged in secret research projects for the government had obtained spectacular results through the use of compounds that produced changes in the molecular structure of the soil being treated, changes that locked the molecules into new compounds.

Now the details of some of that research have been made public. They indicate that spectacular changes in soil characteristics can be produced by such means. The usefulness of these stabilization methods for military operations appears to be definitely established. Whether they will be equally useful for highways or airports, where long life is essential, remains to be seen.

Studies of the possibilities of organic compounds other than resins in soil stabilization also have been begun in the belief that the structural strength of soils can be increased by the addition of inexpensive compounds that will produce an exchange of ions.

Even moderate success in some of these new fields of research could have great significance. On main highways, better bases could be obtained at large savings over today's costs, and for secondary road work, better surfaces could be provided on thousands of miles at costs that would be within the reach of local road-building agencies.



DRIVING IS SAFER

ON THIS "SINGING" HIGHWAY

Double-Duty traffic marker guides drivers by sound and sight both day and night

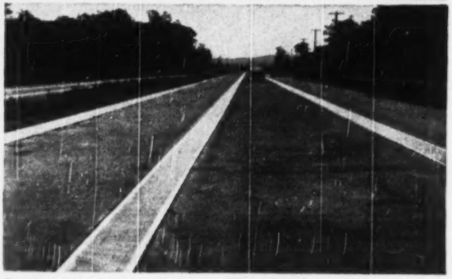
The eyes and ears of drivers are kept constantly on the alert by this double-duty traffic marker.

Made with Atlas White Cement, the marker is constructed flush with the highway level. During the day it furnishes a bright ribbon of white, contrasting with pavement gray, clearly outlining the road ahead. At night, the saw-tooth faces of the marker catch headlight rays and reflect them back to the driver—safely guide him along the highway. And on rainy nights, the wet faces become even more mirror-like, give good visibility when most needed.

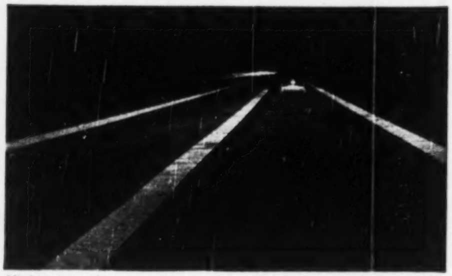
In addition—in *any* kind of weather—drivers can keep safely in lane. Because when a car veers out of lane, its tires ride the ribbed surface, causing a distinct hum-m-m or whine to warn the driver to get back in line. Thus this double-duty traffic marker is helping to make highways safer, promoting driving safety by sound and sight.

Send for descriptive booklet to Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Bldg., New York 17.

At no extra cost—All the advantages of air-entraining portland cement—resistance to effects of freezing-thawing weather and scaling action of de-icing salts; easy placement; greater durability—now available. Ask about . . . **ATLAS WHITE DURAPLASTIC***



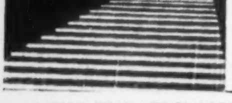
Daytime view of two traffic markers on 3-lane highway in New Jersey shows contrast of Atlas White Concrete against pavement gray. Visibility is high. (White Concrete Reflecting Curb at left.)



Night view of same traffic markers. Driver is guided by sight as saw-tooth faces reflect headlight rays back to driver, and by sound if car veers out of lane and tires pass over corrugated surface.

"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ENR-TM-10



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ENGINEERING NEWS-RECORD

MARCH 16, 1950 VOL. 144 NO. 11

Army, Navy release new data on chemical soil-stabilization

Encouraging results obtained in treating loose sand and poor soils with chemicals to make them serviceable for military operations within a few hours

Vincent B. Smith
ENR Washington Bureau

More information on results of studies by the Army and Navy—to determine whether sands and soils can be consolidated by treatment with chemicals—has been made public following presentation of test results to the Research and Development Board in Washington a few days ago. This supplements the brief announcement reported in ENR March 2, p 26.

Experiments conducted for the Navy's Bureau of Yards and Docks, under the direction of Prof. Hans F. Winterkorn, of Princeton, have gone farther and have produced more evidence in the way of full-scale tests than the project of Army's Engineer Research and Development Laboratories at Ft. Belvoir. The latter used laboratory batches and non-commercial chemicals, whereas Navy experiments have advanced to high-speed stabilization of various types of sand with standard road-building equipment and employing chemicals costing less than 16 cents a pound.

Objectives of the two projects are not precisely the same. The Army Engineers, in cooperation with Prof. John B. Wilbur and the civil engineering department at MIT, aim to develop a process that will convert quickly an ocean beach, muddy road or soupy field into a stable, rubbery surface that will support landing operations, movement of heavy vehicles and landing of aircraft. At the request of the Marine Corps, the Navy is working primarily to densify beach sands even more quickly—to reduce loss of life in landing operations. Navy results, of course, apply also to roads and air strips.

- **Navy stabilization methods**—Prof. Winterkorn was able to show the Research and Development Board motion pictures of fast-moving construction equipment processing sand soils that would support fairly heavy vehicle loads 2 to 3 hours later. In this process, two common road-building machines—a Seaman pulverizer and a P & H stabilizer—applied the chemicals, mixed them into the soil and struck off the mixture to a smooth surface.

Chemicals used in the process are a furfural resin and aniline. The furfural resin is a colorless, volatile, aromatic oil obtained by distilling wood, bran or corncobs with sulphuric acid. It is used commercially in the manufacture of dyestuffs and synthetic resins. The second chemical—aniline—is a colorless liquid obtained by nitration and reduction of benzol.

Chemically, the process involves low-temperature condensation and polymerization of the two liquids through introduction of a catalyst. As the rate of hardening is controlled by the catalyst, the hardening time can be shortened by using other catalytic agents. The catalyst now employed was chosen because it is the best available agent that can be used with ordinary road-building equipment. The machines require a certain amount of time for mixing and striking off the soil. New equipment is being designed by the Navy to permit faster stabilization.

- **Small-scale tests by Army**—At the Research and Development Board meeting, Army demonstrators made laboratory batches of stabilized soil and exhibited test samples. The Fort Belvoir tests were made with calcium acrylate that had to be produced in laboratory quantity as the chemical was not commercially available. Following this material, a catalytic compound—sodium thiosulfate and ammonium persulfate—was added to the aqueous soil mixture. From this point on, action had to be fast, as the material then starts to solidify quickly.

To conserve the limited quantity of sodium acrylate, small batches were prepared in a steel-drum rotary mixer and were placed in 2x4-ft patches 3 in. thick. As desired, the mixture retains a rubbery, elastic character for 2 to 5 hours to permit adjustment to the support of the underlying soil.

After that time, the stabilized soil becomes rigid and concrete-like until it is rewetted. Upon being soaked again, the material resumes its rubbery character, thoroughly stable and not at all slippery.

A difficult soil—Virginia sand-clay—was chosen for the first test, and the

TO SAVE LIVES ON BEACHES—Twenty-four hours after this stretch of sandy beach had been treated by the stabilization process developed by the Bureau of Yards and Docks, this 13½-ton load did not make an impression. (Official Department of Defense Photo.)

TEST LANE—These experimental panels, at Fort Belvoir, include (near center) the panel treated with calcium acrylate that stood up under 15 passes of a jeep although panels stabilized with other materials had begun to go to pieces. (U. S. Army Photo.)

test panel was laid in a lane along with other panels of soil stabilized with portland cement, asphalt and other materials.

Both in supporting heavy vehicle loads and in withstanding the effects of flooding, the chemically stabilized soil proved far superior to the others. It withstood repeated passage of vehicle loads up to 35 tons and flooding for 48 hours. After such a soaking, the material was as strong and flexible as when first placed. The other test strips failed both under 40 passes of heavy vehicles and after 48-hr flooding.

• Regains its shape—Wheel loads of the heavy vehicles ran up to 20,000 lb. When such a load stood on the chemically stabilized soil for a long period, it formed a depression which did not last after the load was removed. The rubbery material came back to a level surface.

The process can be used on soils containing as much as 30 percent water by weight. Calcium acrylate is the basic chemical; this organic chemical is adsorbed by the soil particles. The two other compounds cause the calcium acrylate molecules to lock themselves together. Thus the soil particles are joined in a simple, fast chemical reaction.

About 13 lb of chemicals were used for the 8 sq ft of the test section, which was 3 in. thick. That means about 16 lb per sq yd or about 84 tons for a mile of 18-ft wide road, or 800 tons for a 150-ft wide air-strip 6,000 ft long.

Calcium acrylate is scarce now and hence is expensive. As it is composed of the common elements of oxygen, hydrogen, calcium and carbon, there is no reason why the cost should not be reduced to a few cents a pound, according to the Army research staff.

Mixing methods are under development. At present, a two-step method, incorporating the three chemicals in aqueous solutions during the mixing period of several minutes, appears to be the best.

• Earlier stabilization tests—Early in 1942, very encouraging results were obtained in stabilizing clay soils by the addition of Vinsol resin, a product of the Hercules Power Co. (ENR May 7, 1942, vol. p. 777). Two years later, Hercules brought out an improved product called Stabinol. Considerable quantities of it were used for soil stabilization during the war. However, that work indicated the need for much more research to determine the correct amounts of Stabinol for different soil types. This could not be undertaken during the war. Some interest has developed recently in a dry pulverized sodium salt of Vinsol resin called Vinsol NXV. No large-scale tests have been made.

All concrete pipe types to be promoted jointly

American Concrete Pressure Pipe Association, formed in 1949 to promote interests of that industry, is now affiliated with the 43-year-old American Concrete Pipe Association. The latter has always devoted itself to promotion of concrete sewer and culvert pipe and concrete irrigation and drain tile.

The two associations will coordinate their activities as members of a joint association known as "Concrete Pipe Association, Inc." under direction of Howard P. Peckworth, as managing director for all three.

New president of the American Concrete Pipe Association, elected at the convention in San Francisco last month, is Edward H. Fox, Cincinnati Concrete Pipe Co. Robert V. Edwards, American Pipe & Construction Co., Los Angeles, is president-elect of American Concrete Pressure Pipe Association.

Affiliations affect standing before NLRB

A local materials supply business which is allied closely with other construction interests of a less local character may itself become subject to the National Labor Relations Board.

That's what NLRB has decided by reversing itself on a charge of unfair labor practice against the Tampa Sand & Material Co. A previous charge by the CIO Stone and Allied Products Union was dismissed.

But NLRB, on a second charge, discovered the company is broker for asphalt sales by the Mexican Petroleum Corp. and the Texas Co. Its officers are identical with those of the Cone Brothers Contracting Co. and the Municipal Bond Mortgage Corp. Cone Brothers builds U. S. highways in Florida, and under the Strong Co. precedent, (ENR Nov. 3, 1949, p 15) it could be subject to NLRB jurisdiction. So NLRB took jurisdiction over the second charge, even though Member Abe Murdock dissented.

Other recent NLRB rulings affecting construction include these:

1. It upheld a brewery's refusal to hire AFL millwrights to install bottling machinery. The company wanted to use its own employees, members of the Machinists union.
2. It ordered the AFL Operating Engineers to stop coercing and threatening non-striking workmen on the Army's Wolf Creek Dam job in Kentucky.
3. It refused General Counsel Robert N. Denham's plea to reconsider its action in the case of Clarence Row, a small California contractor. It had refused to assert jurisdiction over Row's business (he has never employed more than 20 workmen on any project). Denham argued NLRB should take the case, which involves closed shop discrimination, because the multi-million dollar construction industry is made up of numerous small units.

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N. C. studies toll road

A north-south toll road across North Carolina is under investigation, but Gov. Kerr Scott, who started the study, insists that no state credit or funds will be devoted to it.

Governor Scott appointed a committee to study the possibility and report to next year's legislature. A Durham bond house agreed to underwrite an engineering survey and to sell the necessary revenue bonds.

As proposed, the highway would originate near Gastonia, then proceed north near Charlotte, Kannapolis, Salsibury, High Point, Greensboro, Burlington, Chapel Hill and Durham.

Money, aggressiveness, legislation needed for road progress, ARBA told

Convention at Cincinnati warned on inadequacy of today's highway program, urged to be bold in developing new plans

More money is needed to finance an unprecedented road program.

Federal financing of state roads must increase, percentagewise.

The public and Congress must be impressed more forcibly with the country's highway deficiencies and requirements.

Highway building must be approached much more boldly.

There must be less inertia in getting at strategic road jobs.

And new legislation—state and federal—must be had to eliminate bottlenecks which threaten to impede, if not throttle, road building.

These points constitute consensus of the solutions to today's road problems which were offered by three authorities to the American Road Builders' Association convention last week at Cincinnati.

• Obsolescence overtaking building—ARBA President Enoch R. Needles, New York consulting engineer, warned of an impending crisis in highway building. Obsolescence on the existing road system, he warned, rapidly is overtaking the new construction rate. He urged that this message be drummed into the public endlessly.

There's no dearth of contractors, Needles emphasized. And equipment available today can perform increased volumes of work at reduced costs. Today's bottlenecks, he said, arise in large part from the inability promptly to get underway work which has been authorized and for which funds are available.

Needles cited two examples of how these delays have been ended. In Maine, he said, a $20,000,000 turnpike has been completed during the past two working seasons. In New Jersey, ten construction contracts are underway on the $200-million turnpike for which planning was started a year ago. All its funds are available and work will end in two seasons.

• Confirmation from Congress—Rep. Will M. Whittington, Mississippi Democrat and chairman of the House Public Works Committee, confirmed Needles' views on more funds for roads. He told the 1,100 engineers and road builders that federal aid for highways must be enlarged during the next two years. But he warned that states must boost their road funds also.

Whittington cited these measures as needed to meet present and future road requirements:

1. A boost from 50 to 75 percent in federal-aid highway financing ratios. (He has moved one step in this direction, ENR March 9, p. 17.)
2. More expressways and four-lane divided highways with controlled access in urban areas.
3. State law improvements to permit speedier right-of-way acquisitions.
4. Federal and state assistance to local road agencies for the improvement of engineering and administration on local programs.

Whittington predicted that the measure he introduced in Congress early this month will meet present and future highway needs. He reaffirmed the federal-aid principle as a base on which to continue and expand the roads necessary for a $250-billion national economy.

• Time to be bold—Thomas H. MacDonald, commissioner of the Bureau of Public Roads, added further support for the concept of a bolder approach to road building. In a paper presented by his assistant, Lawrence Tuttle, MacDonald demanded drastic measures.

MacDonald quoted a survey of highway construction needs prepared by the American Association of State Highway Officials which found a need for the yearly expenditure for the next 15 years of $4 billion ($1 billion for maintenance, $500 million for interest, amortization and administration, $2.5 billion for construction).

To carry out this program, MacDonald said, will require the expenditure of 30 percent more per year than was spent in 1949. He said this would prove a small increase in view of the fact that in 15 years, the roads would be giving the service required of them.

We're failing to meet highway needs today, MacDonald asserted, and he gave these reasons why:

1. The enormous increase in highway travel since the war.
2. Failure of the public and its elected representatives to appreciate the urgency of the situation.
3. The necessity to modernize highway legislation. State inability to control access to arterial routes and state difficulty in obtaining rights-of-way are examples of the latter, he declared.

• Highway directors?—Wilfred Owen, Brookings Institute economist, called for creation of an industry-wide board of directors embracing major interests in the highway transportation field. It might well be part of a federal transportation agency, he said. But it should seek a better balance between road building expenditures and vehicle operating costs. The only approach to sound highway transport, Owen warned, is for each affected industry to cooperate toward good transport at low cost.

We're building 1980's roads today, Owen said. With a $41 billion backlog in existence now, we're spending $3 billion yearly, more than half of which goes for maintenance, debt service and administration. It will take $1.4 billion yearly to correct the deficiencies which will accumulate during the next decade. So, at the present building rate, there'll be a dead heat between new construction and accumulating deficiencies in 1960—and the backlog won't have changed in volume.

• Money isn't everything—Even so, Owen went on, the money problem isn't the only highway problem. One of the basic faults he cited is the fact

(Continued on page 26)

PHS sets up new unit to publish pollution data

U. S. Public Health Service has established a new unit to supervise publication of comprehensive reports on water pollution conditions throughout the country, according to Mark D. Hollis, assistant surgeon general and chief Public Health Service's engineering activities.

It will be part of the Division of Water Pollution Control and be known as the Reports Analysis and Statistics Branch. Perry R. Taylor will head the branch as well as continue his present assignment as executive officer of the Water Pollution Control Advisory Board.

First of the comprehensive reports by the new agency will be published early this spring.

Steel, pollution men agree on waste program

Nine Ohio River Basin steel companies have enlisted with the Ohio River Valley Water Sanitation Commission in a drive to abate steel industry pollution.

Meeting with the commission early this month, representatives of the nine companies suggested that a committee appointed by top management of the companies be established within the next month, to pool knowledge and resources for expediting waste-control and to cooperate with the commission. It was the first of a series of such meetings.

One company estimated that segregation of wastes to permit treatment would cost $25,000,000 for new sewers alone.

that half the states don't have legal control of highway access. Owen had these suggestions for highway improvement:

1. Better control of roadside developments, for greater safety.
2. An end to parking on urban roads.
3. Elimination of certain urban mileage from public highway systems.
4. More ingenious financing, including long-term state bonds or revenue bonds secured by road tolls.

Highway maintenance needs more effective mechanization, according to H. A. Radzikowski, chief of BPR's maintenance branch. He said this is particularly true on rural roads. One solution is multi-purpose equipment which can be operated more hours per year. Another is the joint use of equipment by state, county and local maintenance units.

- **80-year pavement**—City street pavements can be built with a life-expectancy of 80 years, assuming proper maintenance and resurfacing. W. L. Chilcote, Baltimore's deputy highway engineer explained how. His process starts with a 9-in. concrete pavement good without resurfacing for 35 years. Covering it with sheet asphalt after 20 years will make it a 45-year surface, Chilcote said. Another resurfacing after 45 years will raise it to 65-year pavement, and still another could raise the life expectancy of the pavement to 80 years.

Airport savings could be had by building single strips long enough for a plane to land at one end, unload in the middle and take off from the other end. CAA Administrator D. W. Rentzel pronounced such strips feasible. And CAA's Walter Macatee urged that airport access highways be included in the defense highway network.

ARBA endorsed AASHO's program for expanded federal aid, but it sought $1 billion yearly appropriations. Other resolutions: Extend expiration date of the Federal Airport Act until 1958; provide federal aid for purely local roads by enlarging the present federal-aid secondary system; and put into the interstate system with highest priority main roads between cities and Class III or larger airports.

ARBA announced the retirement of Charles M. Upham as engineer-director (ENR March 9, p. 17). He will serve as a consultant to ARBA. Minnesota Highway Commissioner M. J. Hoffman received the association's George S. Bartlett Award.

E. R. Needles was reelected president. Jennings Randolph was reelected treasurer and president of the Airport Division. Paul B. Reinhold, Pittsburgh; C. W. Smith, Pensacola; W. A. Roberts, Milwaukee; and T. E. Stanton, Sacramento, were reelected district vice presidents. H. L. Way, San Bernardino, Calif., succeeds A. N. Buck, Decatur, Ill., as president of the County Highway Officials Division. Reelected divisional presidents were R. K. Stiles, Aurora, Ill., Manufacturers; N. L. Teer, Jr., Durham, N. C., Contractors; H. H. Kranz, Cincinnati, Municipal; A. Diefendorf, Salt Lake City, Educational; and R. S. Pulido, Havana, Pan-American.

FARMS AHEAD—Construction pushes ahead in eastern Washington on irrigation works which soon will let farmers settle on what is now a desert. This photo, on the Burbank pumping unit of the Reclamation Bureau's Columbia Basin project, shows a form for the concrete casing which will protect a steel pipeline at a road crossing. The pipe will connect with the concrete pipeline extending uphill in the background. Lift is about 100 ft. (Reclamation Bureau Photo.)

A. B. Lincoln dies on way to Ft. Randall Dam job

Allan B. Lincoln, job manager for Mason & Hanger Co., New York, died suddenly in Yankton, S. D., March 8, while he was on his way to take over direction of the company's contract on Ft. Randall Dam, on the Missouri River. He was moving from New York City, where he had been job manager for Manhattan sections of the Brooklyn-Battery Tunnel.

Lincoln joined Mason & Hanger in 1939. He had been a field engineer for the Port of New York Authority on both the George Washington Bridge and the Lincoln Tunnel. He was 49 years old, a member of the A.S.C.E. and a graduate of Rutgers University.

BLS sees glut in market for engineers

Graduates this year seen at peak of 47,000—Electricals in greatest oversupply, civils much better off

Because of the large number of veterans who sought engineering training under the GI Bill of Rights, the market for engineers is going to be glutted for some years.

That is the gist of a new report just published by the Bureau of Labor Statistics.

Peak in graduates is expected this year—47,000 as compared with 41,000 last year and an average of 10,000 in prewar years. By 1956, the number is expected to be down to 18,000. Then, need for engineers will have risen about to a point of balance.

The oversupply is expected to be greatest in electrical engineering. Conditions in civil engineering will be much better as enrolments in these courses rose less rapidly after the war than in others. The report estimates that the demand for civil engineers will continue at a fairly high level for several years.

But it notes that this field is much more sensitive to declines in the general business level than are others. Hence, predictions of future demand are much more susceptible of error. Civil engineers are expected to total around 105,000 by 1960.

- **Total engineering employment**—Engineers in the U. S. rose from 27,000 in 1890 to 260,000 in 1940. By the spring of 1948, the total was up to 350,000.

This total is expected to rise again to 450,000 by 1960, an increase of about 8,000 jobs per year.

Death and retirement losses during the decade 1940-50 are estimated as ranging from 5,000 in 1940 to 6-7,000 now.

This rate is seen rising almost to 9,000 by 1960. To this should be added an annual loss of about 4,000 who leave engineering to go into other work.

On this basis, BLS estimates the number of engineering graduates needed during the next several years at 17,000 to 18,000, and it concludes that this might rise to 21,000 to 22,000.

Cooperating in this report were the Engineers Joint Council and the American Society for Engineering Education. Copies can be obtained from the Superintendent of Documents, Washington 25, D. C., for 25 cents.

Report is entitled "Employment Outlook for Engineers." Bulletin No. 968, Bureau of Labor Statistics, U. S. Department of Labor.

Indiana watches appeal on city bonding powers

Indiana municipalities are balancing numerous municipal programs in midair this week, awaiting the outcome of a state supreme court appeal from a ruling affecting their power to issue bonds.

Their prospects were clouded partially, at least, by an earlier state supreme court decision on a somewhat similar case. In that ruling, the court decision denied certain city bonding powers.

To be appealed is a recent ruling by Judge Joseph V. Stadola, who banned the issuance of bonds by the Hammond Sanitary District in excess of the city's 2 percent limit.

Other municipalities are involved because many of them are bonded to their legal limit, thus can not finance numerous urgent projects, particularly health and sanitation works, unless they can find a way around these limits.

Judge Stadola said his decision against the Hammond issue rested on a supreme court decision which barred the Indianapolis Hospital District from issuing bonds for building a general hospital.

There, under a somewhat limited ruling, the court held that the hospital district was a subterfuge with no purpose other than that of evading the bond limit.

But the supreme court, in that case, did not rule definitely that a clearly independent district, serving areas beyond cities, could not issue bonds. On this point rests the Hammond appeal and the hopes of other Indiana agencies.

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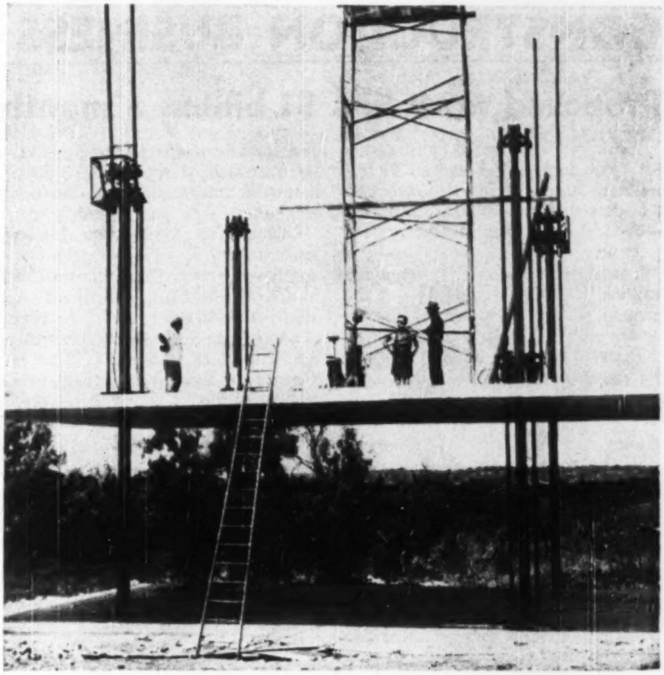
Connecticut contractors set up welfare program

Connecticut contractors and building trades unions have joined in a program under which 8,000 construction workers and their dependents will be covered by a welfare and insurance program.

The plan has the Ok of the Connecticut Associated General Contractors, Connecticut Steel Fabricators and Erectors, and Connecticut Building Trades. Connecticut AGC President Angelo Giardino and Michael Minotti, business agent for the Bridgeport local, Bricklayers Union, are cochairmen of the committee that will administer the program. Effective May 15, the plan permits all the building industry trades to participate.

Many contractors are participating and officials anticipate that others who have not yet joined the program will do so when it is operating smoothly.



RAISING THE ROOF—In constructing a 61x384-ft, 2-story classroom-administration building at Trinity University, San Antonio, Texas, James Stewart & Co., Inc., the contractor, is casting upper story slabs in 40x70-ft units at ground level and then lifting them vertically into place. The method was conceived by Philip N. Youtz, New York architect, and Tom Slick, San Antonio businessman, and developed and tested by the Institute of Inventive Research of San Antonio. Low bids were: $279,364, or $6.35 per sq ft, for the Youtz-Slick method; $303,364, or $6.89 per sq ft, for the conventional method. The same technique is being used by G. W. Mitchell Co. for a dormitory for the university.

Arizona gets road-trip cost data

How much do motorists spend while traveling interstate?

The Bureau of Public Roads asked Montana, Idaho, Arizona and Utah to get answers to this question. A north-south line through these states bisects the United States and the answers will provide valuable planning data.

Arizona's report, completed Feb. 21, was the first to come in.

Its survey reveals the following (all are average figures):

1. Each traveler spent $5.72 a day for food, lodging, gasoline, etc.
2. This came to $0.024 per mile.
3. Each car went 233.5 miles a day.
4. Total spent per vehicle was $16.07 per day.
5. Each vehicle had traveled an average of 11.7 days.
6. Each carried an average of 2.8 persons.
7. Vacations were the predominant trip purpose.
8. Motels were the most-used accommodation of those available.

To get this information, members of the Arizona Origin-Destination Survey party handed trip expenditure questionnaires to interstate motorists. Thus, by using an already established party working for another purpose, extra personnel were not required.

These questionnaires were handed out at three screen-line stations located on the three major east-west highways in Arizona. Two distributions were made from each station, one late in 1948, the other early in 1949. Five distributions covered a two-day period, one three days.

Of 3,317 questionnaires distributed, 935 were returned and 859 of these were usable. Questionnaires were returned by vehicles from 42 states.

Results were tabulated on punch cards and a duplicate set of cards is to be sent to the Bureau of Public Roads for its use. Arizona engineers used the punch cards to analyze the data.

CONSTRUCTION BUSINESS

Proposed work hits $1 billion a month

Additions to proposed construction hit a new high in February of $1,130 million. Proposed new constructoin has exceeded one billion dollars every month since last November.

With new proposed work over a billion dollars a month, construction volume should hold up well over the coming months as much of the recently proposed work is private industrial and commercial building planned for the near future.

New Proposed Construction and Contract Awards

1949	Proposed Work	Contracts
Jan.	$1,070,167,000	$565,826,000
Feb.	1,121,155,000	563,084,000
Mar.	931,516,000	743,529,000
Apr.	531,907,000	589,693,000
May	966,593,000	601,709,000
June	582,069,000	896,128,000
July	729,148,000	619,442,000
Aug.	689,429,000	781,416,000
Sept.	947,821,000	810,309,000
Oct.	610,885,000	553,482,000
Nov.	1,089,726,000	589,224,000
Dec.	1,006,498,000	863,561,000
1950		
Jan.	1,010,751,000	915,475,000
Feb.	1,130,228,000	686,221,000

These new projects added each month, representing gross additions to backlog, brought the total backlog at the end of February to $48,545 million. That's after deduction of $314 million for proposed work advanced to contract award status or cancelled during the month of February.

The net addition to backlog in February was $649 million, $291 million of it private projects and $358 million public works.

From the $2,141 million of new construction proposed during the first two months of 1950, $621 million, or 39%, was deducted before adding to the cumulative backlog; the deduction represent old plans that were advanced this year to active status or else cancelled.

The Middle West has had a terrific growth in backlog this year, most of it new proposed industrial buildings. Net increase in backlog for this region since the first of the year totals $569 million; that's a growth of 8% in total backlog over a period of two months, compared with just 3% for the U. S. as a whole.

And the big increase for the Middle West is in all categories of construction and in all five states of the region.

Illinois, Indiana and Ohio have taken biggest jumps in proposed backlog of construction so far this year. In Illinois, virtually all types of construction backlog showed large gains, especially industrial and commercial buildings and state and municipal buildings and roads. In Ohio, both industrial and commercial building backlog increased strongly. In Indiana, industrial construction was the only big gainer.

Changes in construction backlog since January 1, 1950 by regions are as follows: New England, down 0.2%; Middle Atlantic, up 1.8%; South, up 2.0%; Middle West, up 7.8%; West of Mississippi, up 2.6%; Far West, up 0.8%; and total U. S., up 2.7%.

Since 14 months ago (January 1, 1949), backlog changes have been: New England, up 15%; Middle Atlantic, up 15%; South, up 17%; Middle West, up 20%; West of Mississippi, up 9%; Far West, up 5%; total U. S., up 12%.

Backlog in the Far West has not grown with the rest of the nation either recently or during the past year. New England's backlog has declined since January 1, 1950, but it kept pace with the nation last year.

Proposed Construction Backlog

(in millions)

	Jan. 1 1949	Jan. 1 1950	Mar. 1 1950
Me.	$134	$107	$110
N. H.	93	96	102
Vt.	102	108	108
Mass.	892	1,086	1,068
R. I.	218	255	260
Conn.	606	708	707
New Eng.	2,045	2,360	2,354
N. Y.	5,926	6,032	6,202
N. J.	1,076	1,404	1,405
Pa.	2,348	3,122	3,104
Md.	744	869	911
D. of C.	429	436	461
Del.	122	157	160
Mid. Atl.	10,645	12,020	12,242
Va.	479	559	563
W. Va.	185	203	208
N. C.	519	539	548
S. C.	327	346	343
Ga.	370	388	411
Fla.	701	871	884
Ala.	340	322	331
Miss.	271	286	292
La.	586	753	755
Ky.	170	202	223
Tenn.	572	712	725
South	4,520	5,179	5,282
O.	1,902	2,278	2,428
Ind.	877	922	1,028
Ill.	1,971	2,221	2,490
Wisc.	363	338	356
Mich.	1,441	1,506	1,531
Mid. West	6,554	7,264	7,833
Minn.	390	454	469
Iowa	308	372	387
Mo.	1,430	1,509	1,540
Ark.	534	685	697
N. D.	284	293	311
S. D.	329	335	341
Neb.	393	422	427
Kan.	668	638	643
Okla.	713	749	782
Tex.	4,716	4,963	5,111
Mont.	474	471	473
Wyo.	278	290	290
Colo.	656	696	718
N. M.	251	278	286
W. of Miss.	11,424	12,154	12,475
Idaho	281	393	390
Utah	364	326	329
Ariz.	89	717	747
Nev.	141	135	135
Wash.	1,428	1,533	1,573
Ore.	601	586	588
Calif.	4,502	4,599	4,597
Far West	8,007	8,289	8,359
U. S. Total	43,194	47,266	48,545
Canada	7,103	7,475	7,993

Cement companies making record sales, earnings

Cement companies are making the best earnings in history. Record volume and moderate price rises, combined with improved plant efficiency enabled most companies to show 1949 earnings gains of 10-15% over 1948.

Leading domestic producers Alpha Portland Cement, Lehigh, and General increased dollar sales volume 7-9%, earnings 8-23% and net profit margins 11-12%.

Lone Star Cement Corp. raised volume 17% and earnings 26%, but part of this big gain was in South America, where its 1948 business was greatly hampered by shortages of fuel and by government restrictions.

Penn-Dixie took a 3% drop in sales during the year, but held earnings to an equivalent drop by raising its profit margin.

Shipments of portland cement in the U. S. during 1949 totaled 206 million barrels, 1% more than in 1948.

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Canada tightens vacation pay stamp plan

The Canadian Building Trades Joint Committee tightened up its 2% vacation pay stamp plan last week when it put on notice all construction employers and employees that as of April 1 it will start legal procedures against those violating the law, which now covers every worker.

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Massachusetts jacks wage compensation costs 20%

Increased benefits under the Massachusetts Workmen's Compensation Law raise the rates contractors must pay by an average of 20%. The new schedule was recently approved by Deputy Insurance Commissioner Edmund S. Cogswell.

Largest increase this year is a 50% boost for roofers, while masonry workers' rates are down 4%. The contractor now pays for roofers an insurance rate of $13.35 for every $100 paid out in wages, compared with $8.90 last year. Masonry workers' rates are down this year from $4.56 to $4.38.

Concrete construction workers' rates are up from $4.91 per $100 of wages to $6.01; plumbers from $1.61 to $2.05; and carpenters on private residences from $2.75 to $3.58.

These are the "manual" rates applied to employers not qualifying for an experience rating. Employers who pay $350 or more yearly in premiums have their rates partially determined on the basis of their own accident experience.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 61 went to press.)

Houses—Federal Constructors and Republic Construction Co., Chicago, will build houses in Chicago to cost $10,000,000 for the Packinghouse Workers of America, Chicago. Friedman, Alschuler & Sincere, are architects.

Office Building—Department Public Works, Government of Canada, Ottawa, Ont., will open bids April 19, for East Office Building in Ottawa. Estimated cost is $6,000,000. Allward & Gouinlock, Toronto, are consulting architects and G. Brault is architect for the owner.

Generating Plant—Bates & Rogers Construction Co., Chicago, was low bidder at $3,000,000 when Loup River Public Power Co., Columbus, Neb., opened bids for superstructure of generating plant at Bellevue, Neb. Sargent & Lundy, Chicago, are engineers.

Dwellings—Alba Housing Co., Los Angeles, will construct by own forces $5,000,000 housing development in Albuquerque, N. M.

Wharf and Dredging—U. S. Engineers, Anchorage, Alaska, plan constructing 1,420-ft-extension to wharf and dredging at Anchorage at estimated cost of about $3,556,000.

Apartment—Berhrman & Passell, Pittsburgh, plan constructing $5,000,000 apartment in Pittsburgh.

Hospital—St. Francis Hospital, Trenton, N. J., plans hospital addition in Trenton. Estimated cost is $3,000,000. Schmidt, Garden & Erikson, Chicago, are architects.

Housing—Proposed Michigan public housing incudes $5,000,000 housing project at Pontiac, for Pontiac Housing Authority, $1,500,000 for Ecorse Township Housing Project, Ecorse. Otis Winn, Detroit, is architect for both. Also $4,000,000 for Detroit Housing Commission, for Jefferies Housing Project in Detroit. Smith, Hinchman & Grylls, Detroit, are architects.

Civic Center—Ford Motor Company Foundation, Detroit, has contributed $2,500,000 to City of Detroit for civic auditorium. Architect will be selected in the near future.

Incinerator—Town of Hempstead, N. Y., will open bids about May 1, for incinerator at Merrick, N. Y. Estimated cost is $2,000,000. Henry W. Taylor, New York, is the consulting engineer.

Housing—City of Providence Housing Authority, R. I., will take bids April 17 for Admiral Terrace Veterans Housing Project at Providence to cost $2,750,000. Cruise & Aldrich, and Creer Kent Mather, Providence, are architects.

Pipe-Line—International Pipe Line Co., Edmondton, Alta., plans constructing 30-mile pipe-line to link pumping station at Edmondton, with Redwater Oil Field. Cost is about $2,000,000.

Ball Bearing Plant—Pigott Construction Co., Ltd., Toronto, Ont., will build ball bearing plant at Scarborough, Toronto, for Canadian SKF Co., Ltd., Toronto, at about $2,000,000. Dominion Bridge Co., Ltd., Toronto, will furnish structural steel. T. Pringle & Son, Ltd., Montreal, Que., is engineer.

Divided Highway—Central Pennsylvania Quarry, Stripping & Construction Co., Hazelton, Pa., was low at $2,189,934 for constructing divided highway in York County, Pa., when Pennsylvania Highway Department, Harrisburg, opened bids March 10.

Pollution Abatement Plant—Hoberg Paper Mills, Inc., Green Bay, Wis., plans constructing pollution abatement plant to cost about $1,250,000.

Leroy Anderson Dam—Santa Clara Water Conservation District, San Jose, Calif., received low bid on program A for Leroy Anderson Dam in Santa Clara County from Guy F. Atkinson Co., South San Francisco, at $1,879,772; on program B, United Concrete Pipe Corp. and Westbrook & Pope, Baldwin Park, were low at $2,175,781. G. Walter Hunt, San Jose, is engineer

Apartment—Westchester Apartments, Fort Worth, Tex., is taking bids for the construction of apartment in Fort Worth to cost $3,000,000. Wilson & Patterson, Fort Worth, are architects.

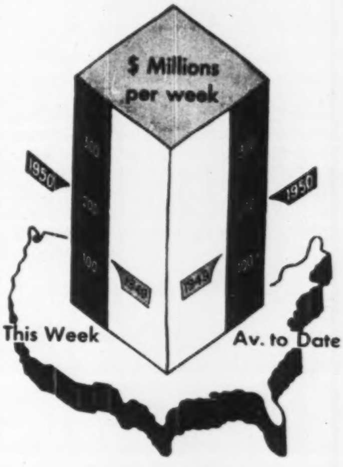
Bridge—M. E. Gillioz, Monett, Mo., has been awarded contract for bridge over Arkansas River at Tulsa, Okla., by the Oklahoma State Highway Dept. at $1,135,899. S. K. McClelland, Oklahoma City, is highway engineer.

Dwellings—Burdett-Perry, Inc., Tampa, Fla., will construct dwellings in Tampa for Davis Island Corp., Tampa. Estimated cost is $4,000,000. A. M. Watson, Tampa, is architect.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Mar. '50	488.35	234.75
Building Cost	Mar. '50	359.98	194.5
Volume	Feb. '50	305	134



Activity This Week

As reported to ENR
(in millions of dollars)

Amount of contracts let

	Week of Mar. 16 1950	Cumulative 1950 (11 wks.)	Cumulative 1949 (11 wks.)	% chge
Federal	$8.2	$366.8	$247.2	+48
State & Mun.	58.4	595.7	514.7	+16
Total Public	$66.6	$962.5	$761.9	+26
Total Private	146.6	1,196.4	797.4	+50
U. S. Total	$213.2	$2,158.9	$1,559.3	+38

Contracts by type of work

	This Week	Cumulative 1950 (11 wks.)	Cumulative 1949 (11 wks.)	% chge
Waterworks	$3.0	$58.2	$28.3	+48
Sewerage	7.4	47.7	40.8	+16
Bridges	5.6	68.1	76.8	−11
Highways	22.7	184.6	98.1	+88
Earthwork, Waterways	3.7	66.6	104.1	−36
Buildings,				
Public	22.2	459.6	363.6	+27
Industrial	28.0	214.9	209.0	+3
Commercial	110.4	881.2	519.8	+69
Unclassified	10.1	178.0	118.8	+50

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1950 (11 wks.)	Cumulative 1949 (11 wks.)	% chge
NON-FEDERAL	$932.6	$1,018.7	−8
Corporate Securities	436.8	495.7	−12
State and Municipal:			
Excl. Housing	335.3	415.7	−19
Housing	160.5	107.3	+50
Total Capital	$932.6	$1,018.7	−8

Adopting Latest Design Concepts . . .

Oak Ridge Builds High-Standard Schools

E. F. Newman
Engineer, Skidmore, Owings & Merrill
Oak Ridge, Tenn.

CHILDREN of the atom-plant workers in Oak Ridge, Tenn., now attend two new elementary schools embodying the latest developments in lighting, heating and space use. Next year, an equally modern senior high school will be available to them.

The schools are part of the Atomic Energy Commission's building program at Oak Ridge. AEC is providing these educational facilities to serve new neighborhoods, to relieve congestion in war-built temporary schools and to replace temporary structures with permanent buildings of greater capacity.

Designers followed very closely the recommendations of the Oak Ridge Master Plan (ENR July 21, 1949, p. 48) as to location, size and general facilities. They developed design criteria around the program and educational methods of the local school system. Wherever possible within budgetary limitations, they took advantage of new developments in materials, equipment and layout. And they planned for additional use of the buildings by the community.

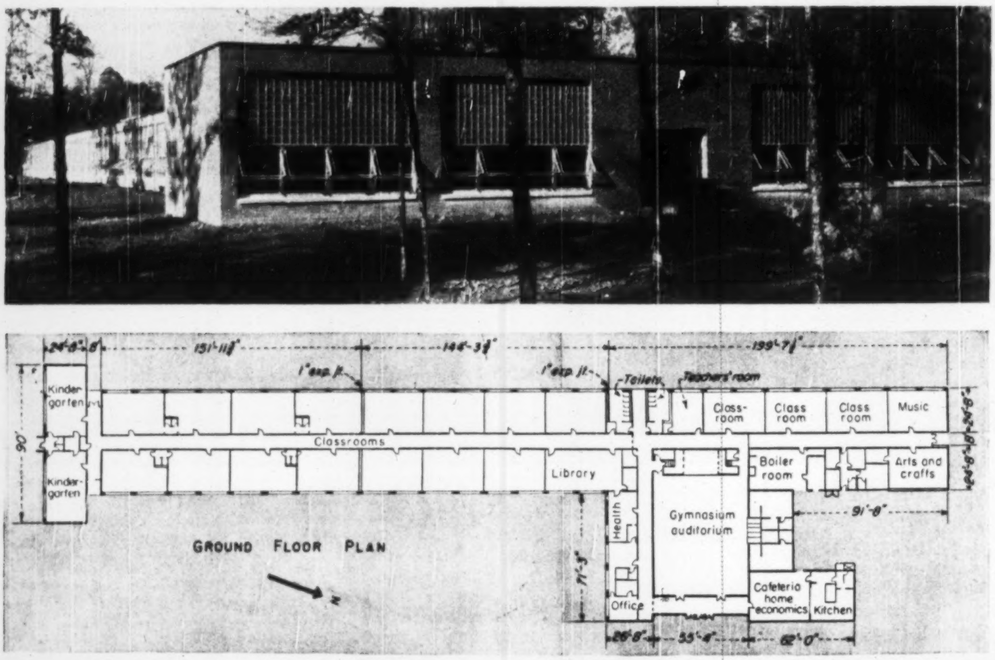
In designing the two elementary schools they took into consideration the fact that one of them—the Willow Brook School—was to be built in an existing residential area that will form a new neighborhood at one end of town, and that the other—the Woodland School—was to be integrated into a brand new residential neighborhood.

• **Willow Brook School**—for 525 students—is located on a 17-acre, hilly site. Taking advantage of the terrain, the designers made part of the building one-story high and the remainder two-story. They adopted an L-shaped plan because it gave them an efficient arrangement of facilities.

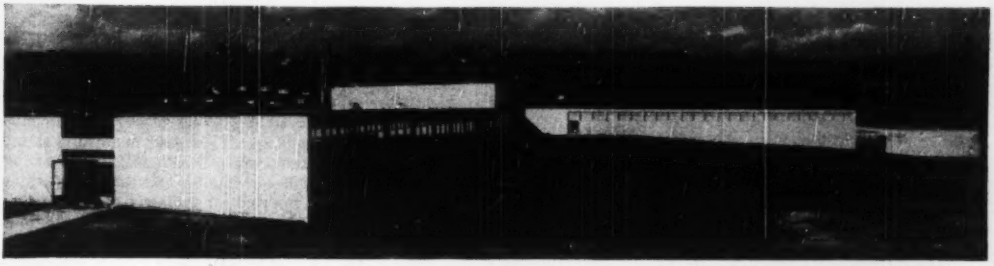
One long wing consists of two rows of classrooms on one level. The other houses special activities and administration facilities on two levels. This wing is attached at one end to a short, one-story kindergarten wing. A cafeteria and a gymnasium-auditorium, respectively, occupy the ground and first floors at the intersection of the main wings. With this arrangement, noisy activities will not be carried on next to rooms devoted to quieter uses.

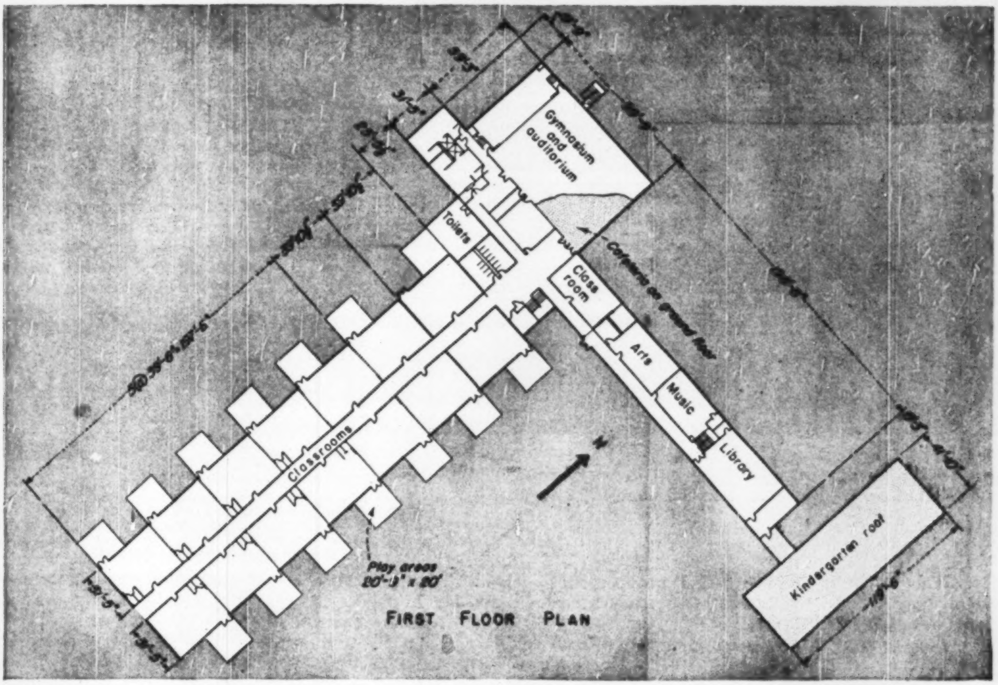
The school has a total floor area of 60,654 sq ft, including 15 general-activity classrooms, 3 kindergarten rooms, 3 special-instruction rooms and 4 offices for administration and teachers. There are also a library, health clinic, cafeteria, kitchen, gymnasium-auditorium and boiler room. The general-type classrooms, with their discussion and activity areas, space for work counters, wardrobes, sinks and toilet facilities (in lower-grade classrooms only) average 1,126 sq ft, or 45 sq ft per pupil.

The building has a reinforced concrete frame. Walls are made of lightweight concrete block. The roof consists of a lightweight concrete slab



WOODLAND ELEMENTARY SCHOOL, rectangular in shape, is one story high. Walls are concrete block faced with brick. Two-thirds of each window is directional glass block, the remaining lower third is operating aluminum sash.





WILLOW BROOK ELEMENTARY SCHOOL, L-shaped, contains classrooms on one level in one wing and special activities and administration facilities on two levels in the other. A gymnasium-auditorium is at the intersection of the wings.

cast in place on open-web steel joists, and 4-ply built-up roofing.

To obtain an indoor-outdoor effect, the designers called for full window walls (down to a 2-ft sill) and double exit doors opening out at grade to 20x20-ft asphalt-concrete play pads for each classroom. They secured bilateral lighting by introducing a clerestory over the corridor. To achieve this, they lowered the corridor ceiling below that of the classrooms and placed piping and service conduits in the floor. And to supplement the natural lighting (seeking 35 ft-candles at desk level at all time) they specified fluorescent fixtures.

An automatically controlled radiant-heating system meets 70% of the heating requirements of the building. Consisting of 21,000 ft of 1-in. copper pipe embedded in the concrete floors, it is used in the classroom wing, the kindergarten and the ground floor of the special-activities wing. The gymnasium-auditorium has two heating and ventilating units and four exhaust fans. Elsewhere, steam convectors heat the rooms.

Other design and equipment features of the Willow Brook School include acoustical-tile ceilings, reversible chalk and tack-board combinatoins, a public-address and intercommunication system, and toilet facilities with scaled-down fixtures for kindergarten and lower-grade classrooms. Liberal use was made of color for interior finishes to emphasize the differences in space use and to improve the visual environment.

John A. Johnson & Sons, of Oak Ridge and Brooklyn, built the school in 13½ months under a general contract including site development, attached equipment and utilities. Total construction cost was $944,045. Cost of the building with equipment was $860,698, or $14.19 per sq ft $1.015 per cu ft and $1,639 per pupil.

• **Woodland School**—Different factors affected the design of the Woodland School, which has a capacity of 550 pupils—about the same as the first school. Since it is built in an entirely new residential neighborhood, the designers developed its functional character to satisfy precise community needs and endeavored to blend the

WOODLAND CLASSROOMS are steam heated with convectors. Natural lighting with directional glass block is supplemented by fluorescent.

WILLOW BROOK CLASSROOMS are designed to handle many activities. The green glass chalkboard at the left is stationary, but the combination chalk-tackboard at the right is reversible. Children's oak furniture is movable.

structure with its surroundings.

They found site conditions favorable. They carefully weighed design alternatives. And as a result, they produced a well balanced, flexible school, which was constructed at relatively low unit cost.

The flat 15-acre site enabled them to adopt the single-level scheme favored for elementary schools. They made the building rectangular in shape, 529 ft long. They oriented it to face the long arc of a principal neighborhood street but set it back an ample distance to preclude disturbance by street activities. For safe pedestrian access, they provided concrete walks and footpaths leading toward adjacent residences and roads.

After carefully studying various layouts and reducing space requirements to a satisfactory optimum, the designers fitted all facilities on a floor area of 39,924 sq ft. These facilities include 18 general-activity classrooms, 2 kindergarten rooms, a music room, arts-and-crafts room, library, health room, combined home economics and cafeteria kitchen, gymnasium-auditorium and offices for administration and teachers.

Substantial savings resulted from the school system's plan to transport food prepared at the new Senior High School cafeteria to this school. This scheme made it possible to reduce cafeteria and kitchen requirements and to combine these facilities with home economics.

By placing toilet facilities between adjoining classrooms, off a small corridor connecting the rooms, the designers kept to a minimum separate toilet installations for the kindergarten and 8 lower-grade rooms. The various savings in floor area held the classroom space down to 35.5 sq ft per pupil.

The designers considered load-bearing wall and pier construction logical for the flat site and the single-level scheme. They used concrete block faced with brick for the exterior. By specifying directional glass block for the upper two-thirds of window openings and operating aluminum sash for the lower portion, they obtained desirable daylighting of classrooms without more costly bilateral lighting. The combination of brick, glass and block makes the Woodland School attractive and provides a note of relief from the concrete-block construction of neighboring houses.

Corridor walls generally are load bearing. However, to provide flexibility in use of space, interior partitions were framed with wood and faced with gypsum board. The designers believed this to be economical not only in first cost but also in making future alterations. The roof consists of built-up roofing and wood sheathing supported on open-web steel joists.

Kindergarten rooms and lower-grade classrooms are heated by coils placed in the floor slabs. Elsewhere, convectors are used. Air is exhausted from the classrooms through a duct over the central corridor ceiling.

A. Farnell Blair Co., Inc., of Atlanta, Ga., built the school in 12 months. Total cost was $468,402. Cost of the building and installed equipment was $405,305, or $10.15 per sq ft, $0.65 per cu ft and $737 per pupil.

In addition to the economies mentioned, several other factors were responsible for the low cost. The school was close to utilities installed under contracts for adjacent residential areas. There was a notable increase in competitive bidding during the six months (June, 1948, and Jan., 1949) between the letting of contracts for the two elementary schools. Prices generally were lower and efficiency of workmen improved.

• Senior High School—Still other factors affected the design of the new Senior High School. Planned for a capacity of 1,500 pupils, it will be the first major unit of the town's future Cultural Center, where the educational, social, recreational and cultural life of the whole community will be focused. As the design was developed, the architects paid careful attention to the school's multi-purpose function. At the same time, they established design criteria to secure low first cost and inexpensive maintenance.

Considerable cost was involved in the 1500-seat auditorium, which was clearly a municipal facility. Only 750 seats would have been required strictly for school use. Yet, despite the added burden of the facilities provided for community use, the school cost only $11.18 per sq ft.

Placed under contract last June, the high school is being constructed on a 540-calendar-day schedule. It consists of four buildings on a partly wooded, rolling site. They are arranged in two groups connected by a 265-ft enclosed passageway.

The four buildings have 191,000 sq ft of floor area. This includes space for 32 discussion-activity type classrooms and 31 special instruction rooms for science, home economics, journalism, commerce, arts and crafts, drama and music. There are also shops for vocational training; complete administration facilities, offices for student guidance and a library; a cafeteria; an auditorium with fully equipped stage; boiler and machine room; and a gymnasium and related athletic facilities. The cafeteria can handle 1,500 in three shifts and is equipped with a student's lounge and a stage.

The main classroom building is two stories high, 564x64 ft. Fronting on a street handling interneighborhood traffic, it contains the activity-discussion classrooms, science and home-economics laboratories, other special activity rooms, and administration and teachers' facilities. The library, seating 120 students, occupies a wing perpendicular to the main building.

Composed of a series of typical bays, the classroom building has a reinforced concrete frame. Walls are concrete block faced with brick. Floors are concrete, the second floor being supported on open-web steel joists. Partitions are concrete block and gypsum. Roofs are 20-year bonded, built-up roofing on cast-in-place gypsum and gypsum decking, which are carried on open-web joists.

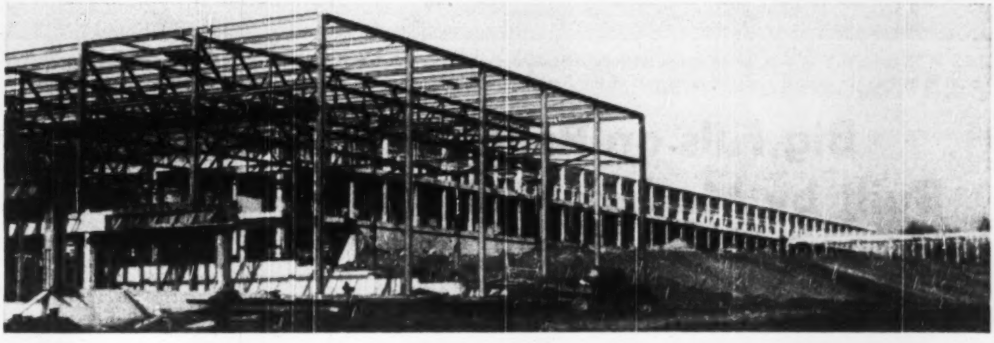
Next to the classroom building on the west is the gymnasium, which has a floor area of 29,500 sq ft. It has a fireproofed steel frame, concrete block walls and brick facing.

The municipal auditorium, cafeteria and shops are in the other two buildings. The auditorium and cafeteria have a floor area of 48,000 sq ft. The shop has 22,600 sq ft. It houses facilities for training automobile and airplane mechanics and classrooms for special instruction in other trades.

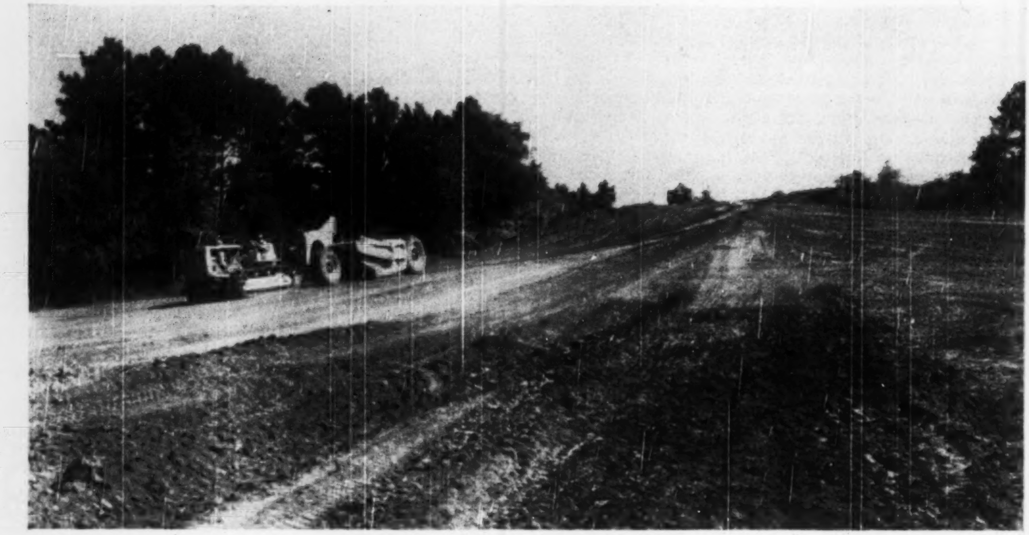
All buildings have aluminum projected windows. Doors are wood, with glass panels, and have extruded aluminum frames. Three low-pressure boilers will supply steam for fin-type radiators, convectors, and heating and ventilating units. Exhaust ventilation will be provided by power ventilators on building roofs.

John A. Johnson & Sons, Inc., is the general contractor on this project. The total amount of the contract including buildings, site development, utilities and attached equipment is $2,473,174. The building cost, including 5 ft outside the building line, amounts to $2,137,800 or $11.18 a sq ft, $0.64 per cu ft and $1,425 per pupil, including the auditorium.

Planning, design and supervision of construction for the three schools were performed by Skidmore, Owings & Merrill, architect-engineer, of Chicago, New York and San Francisco, under contract with the Atomic Energy Commission, Oak Ridge Operations Office.



SENIOR HIGH SCHOOL consists of four buildings arranged in two groups connected by an enclosed passageway. Photo shows steel frame of gymnasium and reinforced concrete frame of main classroom building.



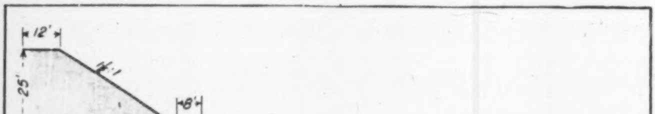
FILLS WERE BUILT in 6-in. layers under carefully controlled moisture and density conditions, using large earthmoving equipment to assist in getting the desired compaction, as part of the Nashville, Chattanooga & St. Paul Ry. relocation around Allatoona Dam.

Big Fills on Railroad Relocation Built by Modern Compaction Methods

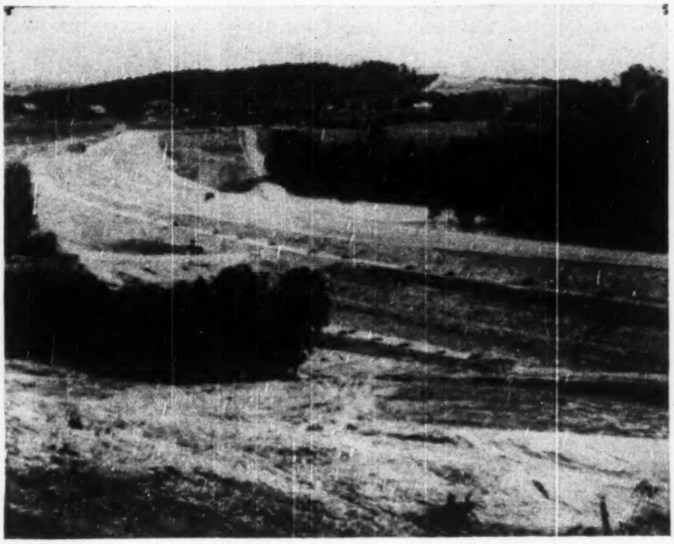
REFINEMENTS in fill building that are expected to pay large dividends in reduced maintenance costs were applied in relocating the Nashville, Chattanooga & St. Paul Ry. around the reservoir behind Allatoona Dam.

Construction of that dam on the Etowah River near Cartersville, Ga., made necessary the relocation of 5.7 miles of the railway to replace trackage that will be inundated when the reservoir behind the dam is filled. In this relocation, 1.6 miles of distance was saved, curvature was reduced from a maximum of 6 deg to a maximum of 2 deg, and the number of curves was cut from 27 with a total central angle of 968 deg to five with a total of 240 deg. However, both deep cuts and high fills were required to produce these savings.

Large quantities of earth and rock were taken out of the cuts, but much of the earth was poor embankment material because it ranged from silts to fire clays. The most abundant soil was a light, fluffy micaceous clay loam. Consequently, much of the micaceous material taken from the cuts had to be put in center of the fill and material from the borrow pits placed on the outside 12 ft of the fills to hold the unstable material in place. Or, in the words of one of the engineers: "Build-


12'
1½:1
25'
8'
1½:1
25'
8'
Varies
Surface ditch
Strip 1'-0 min
HALF SECTION TYPICAL FILL OUTSIDE RESERVOIR
8'-0" min.
2½:1 slope
Ground line
Strip 1'-0"
1:1
1:1
3'-0" min.
Detail A
12'
1½:1
Varies
8'
El. 855
Top of riprap El. 884
3' min
2:1
25'
8'
El. 830
2½:1
Varies
See Detail A
Strip 1'-0" min
HALF SECTION TYPICAL FILL INSIDE RESERVOIR

EMBANKMENT SECTIONS were designed to insure stability and to reduce maintenance costs resulting from erosion of the slopes.



ONE OF THE COMPACTED EMBANKMENTS nearing completion. The fill was about 15 ft below grade when this photo was taken.

ing a form out of good material from the borrow pits to keep the mica soil in place."

• Building the fills—Typical sections are shown in the sketch on the opposite page. Where fills are partly submerged in the reservoir the wider base and flatter slopes shown in this drawing were specified.

Slopes on embankments outside the reservoir are 1 on 1½ to a depth of 50 ft below subgrade and are 1 on 2 for the lower parts of fills over 50 ft high. Berms 8 ft wide were built at intervals of 25 ft below subgrade to add to the stability of the embankments and to reduce maintenance due to erosion.

Slopes on submerged banks are 1 on 2½ from ground level up to average pool level, 1 on 2 from that point to the level of the 50-year flood, and 1 on 1½ from there to the top. Fills are 25 ft wide at subgrade level.

Slopes in the reservoir areas are protected from wave damage by a 3-ft thick blanket of dumped riprap up to the 50-year flood level.

Fills were built in 6-in. layers and compacted to 95 percent of standard Proctor density. Only the better materials from the cuts or stable materials from borrowpits were used in the outer part of each layer, poorer materials from the cuts being placed only in the central zone.

After each layer had been spread the whole area was rolled with sheepsfoot rollers until the rollers "walked out". Sprinkling was done during dry weather to obtain the desired moisture content, and in wet weather, the layers of fill material were disked to dry them out, if necessary.

Fill rolling was carried on continuously in three 8-hr shifts. In order to keep the equipment employed efficiently, several fills were placed under construction at the same time. On the grading work, the contractor worked an 11-hr day shift and a 12-hr night shift, working only the scrapers at night.

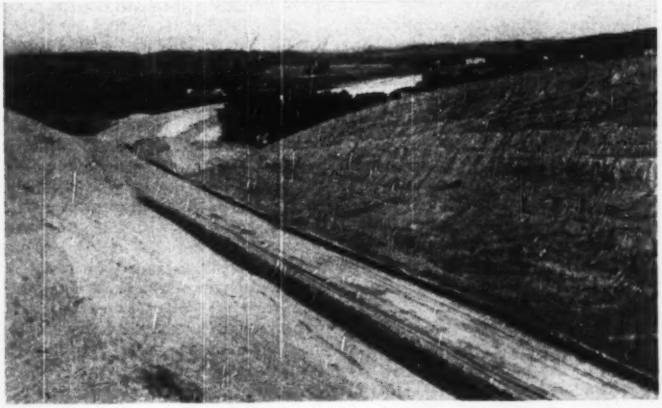
• Fill tops stabilized—The top three feet of all fills was mixed with sand added at the rate of one-third yard of sand to every yard of dirt, the sand being disked in, after which the layer was sprinkled and rolled until the rollers walked out. This was done to keep ballast from penetrating down into the fill.

Similar treatment was given to the bottom of cuts, where excavation was carried to 4 ft below grade.

All earth slopes were planted with Kudzu, an oriental vine, soon after completion. Next spring they will be planted with Italian rye and sericea lespedeza.

This work was carried out under the direction of J. C. Aker, chief engineer of the N. C. & St. P. Ry. R. W. Mabe is assistant chief engineer, Frank R. Patton, resident engineer and Dan Barge Jr. assistant resident engineer.

The contractor was the Oman Construction Co., with R. W. Kirby project manager and W. M. Smith engineer.

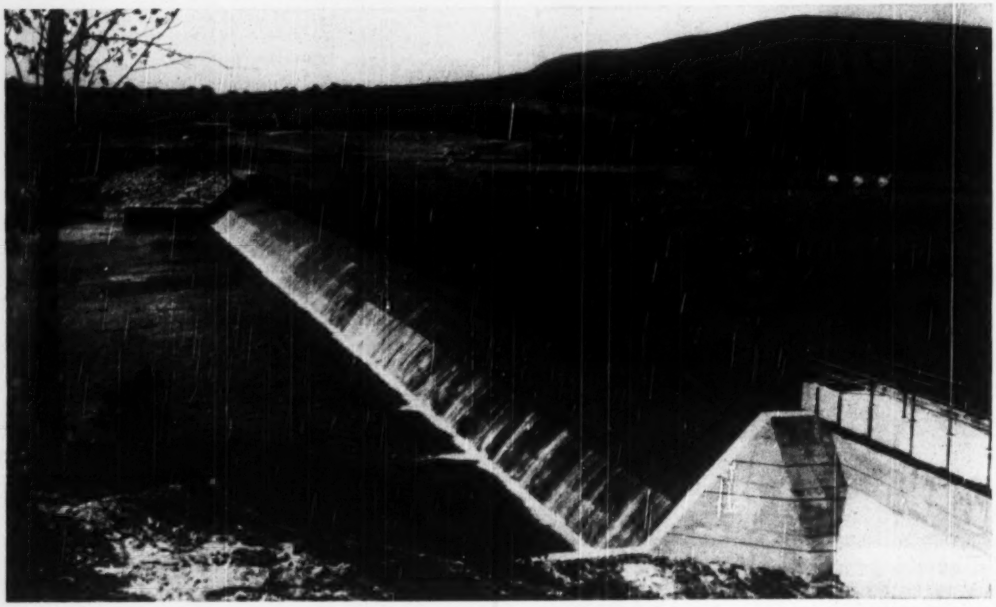


THIS DEEP CUT provided much of the fill material. Cuts were excavated to 4 ft below grade and then brought to grade with stabilized material.

Army Tests Survey Tower

A lightweight triangulation tower, suitable for transportation by air, has recently come through initial tests and will be subjected to further proving by the Army Engineer Research and Development Laboratories.

Designed for use in military surveys, the tower is of variable height—from 37 to 103 ft—and is of aluminum. Actually two mutually indpendent towers in one, the outer tower (113 ft) is for the surveyor, whose movements cannot disturb the delicate adjustments of the survey instruments mounted on the inner tower. The structural members weigh only 4,165 lb, as compared to 6,640 lb for the standard World War II steel tower of the same height.



CLEAN STREAMS—This silt-impounding dam, at New Kernsville, on the Schuylkill River, is indicative of one type of project Pennsylvania's General State Authority is building. Whatever the type of public structure that is needed . . .

Pennsylvania Authorities Solve Works-Financing Puzzle

Quarter billion public works program, without general tax increases, has provoked a political fight, but it includes state projects from mental hospitals to stream cleaning

John Baer
ENR's Correspondent

PENNSYLVANIA is ready to bet a quarter of a billion dollars—or more—that it has solved the problem of raising capital for vast public works programs that can't be delayed.

And it's using a relatively painless, politically astute device to raise the money without raising other than nuisance taxes—or tangling with the state's constitutional requirement of a vote on any state debt over $1,000,000.

• Politics only problem—Pennsylvania is using authorities—three of them—to perform a wide variety of tasks all the way from building schools to cleaning rivers. There's a certain amount of intra-party GOP politics involved and there is still some bitter complaint to be heard about the nuisance taxes. On the other hand, though, the state is in a position to remedy institutional shortcomings which were ancient political issues a decade ago. And on the record so far, it's getting "extremely cheap" money.

The three authorities operate independently of the state and each other, although two of them are closely allied. Each borrows and builds on its own, then rents structures to state or local governing bodies until they are paid for.

• Used locally, too—Actually, so deep has Pennsylvania plunged into the authority device that there are about 200 local authorities in existence—aimed at bypassing legal restrictions under which governing bodies no longer feel they can operate successfully. The three state authorities are:

1. The General State Authority. It may issue up to $175,000,000 in revenue bonds for the construction of new mental hospitals, rehabilitation of state teachers' colleges, cleaning the Schuylkill River and remodeling or constructing other public buildings. So far, GSA has earmarked more than $100,000,000 for specific projects, and it has sold a $30,000,000 issue of serial debentures (3-25 years) at a net average interest cost of 1.74 percent.

2. The State Public School Building Authority. It may build school buildings for local school boards which are unable to finance them, and has no limit on the amount of revenue bonds it may issue. It has approved projects valued at $18,000,000, has requests for $73,000,000 of construction.

3. The State Highway and Bridge Authority. It may issue up to $40,000,000 in revenue bonds for the construction of 22 large highway and bridge projects. (There'll be an additional $14,000,000 in federal aid funds available for this program, too.) It has sold a $15,000,000 serial bond issue (4 to 12-year maturity) at a net interest cost of 1.25 percent.

• Two share leadership—The General State and Highway and Bridge Authorities are very similar. The top level personnel of each—except for chief engineers—is identical. The School Building Authority has its own staff.

Authorities aren't entirely new to Pennsylvania. There was a General State Authority in 1937, organized by the only Democratic governor, George H. Earle (1934-1938), since Civil War Days. It was terminated in 1945, and its outstanding bonds liquidated for $47,000,000. The new authority was established last year, after considerable intra-GOP legislative struggle, at the insistence of Gov. James H. Duff. His motivation was the ineffectiveness of his stepped-up state building program—$80,000,000 for mental hospitals, $35,000,000 for Schuylkill River desilting, etc.

When it developed this program wasn't meeting demands—and that new taxes would be difficult—Duff reverted to the General State Authority, killed by his predecessor, and the Highway and Bridge Authority. After a severe legislative fight, Duff got his program.

• **Courts upheld SBA**—The School Building Authority antedated the other two on the statute books, but a stormy series of legal tests delayed its effective date until the time the GSA and HBA went into effect. Its law was amended somewhat last year.

The governor, state treasurer, auditor general, senate president and minority leader, speaker of the house and its minority leader are members of all three authority boards. Various other cabinet officers are members of one or more authority boards.

Russell C. Bartman heads the School Building Authority. W. W. Behrens is its chief engineer. SBA leaves the design of school buildings to the school boards for whom it builds. It allows local officials to choose their own architects, aiming at keeping decisions at home as much as possible. The authority does inspect structures.

• **School credit tighter**—SBA securities vary in nature as investments from the GSA or HBA issues. Impoverished school districts (mainly in the coal fields) have been a Pennsylvania problem for years and the sole backing for these issues is the rentals for schools. Consequently, SBA faced twice the interest rate for its first issue that was achieved by the other two authorities in the open market. SBA's first issue went to the Public School Employes Retirement Fund.

SBA requires approval of all its buildings by the state Department of Public Instruction. The department not only approves the facilities but determines whether the district can afford them. Thereafter, the authorty will acquire the site if necessary, pay the architect's fee and even furnish and equip the structure. It limits contingency charges to 8 percent.

• **Accelerated amortization**—The authority proposes also to require that rentals amount to 120 percent of the principal and interest requirements on the bonds charged to a project. These rentals enter a sinking fund whence interest is paid and from which a fund is established equal to two years' interest on the bonds. The remainder is available for bond redemption. On this basis, a school district can amortize its debt in about 32 years.

GSA and HBA are headed by Oscar N. Lindahl, retired financial vice president of Carnegie-Illinois Steel Corp. Allen F. Jones is chief engineer for GSA, Samuel P. Longstreet for HBA. Each authority pays its people generally more than the going scale for other state workers. At that, GSA is having some difficulty filling technical jobs. Commissioning of private engineers and architects for 208 jobs created a tight personnel squeeze.

• **Many projects possible**—GSA is empowered to build, improve, furnish, acquire, maintain and operate sewers and treatment works for state institutions, commonwealth buildings, state arsenals, armories and other military works, airports, state institutions school buildings, highways and bridges tunnels, pools and lakes, low-head dams, river works, desilting dams and impounding basins. Its act, though, expressly prohibits it from undertaking any project—other than bridges which might compete with toll bridges—which would duplicate or compete with any enterprise serving substantially the same purpose. It has the power of eminent domain, but no taxing power. Its revenues are solely from rentals. Its bonds may not exceed 30 year maturities, their interest six percent, nor their redemption prices 105 percent of principal.

• **Bond prospects good**—State fiscal officers figure the market for GSA's future issues will be good. They eye the pension funds, more and more of which will be accumulated, as one source of purchasers. Its leases may not exceed 30 years, rentals must amortize the cost within that time. GSA may be thrown into receivership—upon default of interest or principal payments—but for the purpose of management only. Its property may neither be assigned nor mortgaged.

HBA is governed generally by the same rules, but the Highway Department is its only customer. Its leases run 30 years.

GSA has been the first of the three to get into construction. It took over going state construction projects valued at $14,000,000 before the end of 1949, and opened bids on the first of its own projects just before Christmas. Final plans for 101 projects are due in its hands by May.

Gov. James H. Duff

Russell C. Bartman

Oscar N. Lindahl

What Lessons have been learned from operation of contact-aeration sewage plants? What is the best design basis? What efficiency can be expected? Here are some of the answers as . . . . .

A Developer Comments on The Design of Contact Aeration Plants

Llewellyn B. Griffith
Consulting Engineer, Washington, D. C.

The article "Compact Sewage Plant for 160 People" by R. W. Simpson (ENR, Nov. 10, 1949, p.27) gives cause for a discussion of changes in design of contact-aeration plants that have occurred in the last five years. It seems reasonable—as a result of operating experience—that former design criteria should be revised to reflect accurately improved process efficiency.

• **Bases for efficiency**—As a result of a study of considerable operating data, I have found that efficiency of contact-aeration treatment is dependent on: Total amount of biological film, which is proportional to area of contact; effective passage distance that each sewage particle must take in its helical path through the aeration tank; and treatability of sewage.

In more recent plants of this type, sewage is made to follow a helical path between contact surfaces as it passes from the aerator inlet to outlet. Such aeration is accomplished in the "Griffith tank." In it, circulation can be regulated to increase number of passages which sewage makes between stationery contact surfaces. Aerobic conditions are, of course, assumed in considering design criteria.

• **Treatment efficiency expected**—To determine normal treatment efficiency for a two-stage plant handling typical domestic sewage, the graph may be used, where aerators are of similar design and detention periods for settling tanks are as recommended by me (ENR Jan 28, 1943, p.60). The curve formula is:

$$Y = \frac{100}{1 + 0.06xk} \quad \text{in which}$$

Y = Percent BOD reduction by the aerator and its settling unit, x = Pounds BOD applied to aerator per day per 1,000 sq ft of contact surface per 1,000 ft effective passage at average flow rate. Up-to-date designs contemplate 1,000 ft of effective passage for each hour that sewage is in the aerator. k = Treatability factor, is unity for this case. My experience in treating waste from processing milk, beans and corn indicate that these wastes are less treatable than domestic sewage.

The curve (next page) is consistent with efficiency graphs developed by the National Research Council (Original Report of the Subcommittee on Sewage Treatment in Military Installations, 1946) for military installations equipped with perforated-pipe diffusers. The report points out that such diffusers are less effective than porous tubes, and that passage distance for such similar plants can be expressed in terms of the detention period.

My suggested efficiency curve is consistent with the findings of Imhoff and Fair (Sewage Treatment, John Wiley & Sons, Inc. p. 142). They state the principal advantage of contact aerators: "The units can be designed to accomplish almost any desired degree of partial treatment. For example, in one hour of aeration about one half the BOD—that can be taken out by complete treatment in 4 to 6 hr—is removed."

Because aerators are continuously seeding and are subjected to toxic wastes—such as digester supernatant liquid—these factors influence selection of a typical performance curve. Dr. Karl Imhoff—one of the early pioneers with contact aerators—has shown (Teschenbuch der Stadtentwasserung) that a contact aerator matures in one to two days and is relatively free from upset by toxic industrial wastes.

• **Design Criteria** – Simpson states that the Texas Health Dept. specifies only 82 sq ft of contact-plate surface per pound of applied BOD. But G. H. Herzik, Jr. indicates that the department uses design criteria (Sewage Treatment by Contact Aeration, Public Works, Aug. 1948) recommended by me (ENR Jan. 28, 1943, p.60). On this basis, Texas' requirements for a typical domestic is 82 sq ft x 1.5 (peak-load factor) or 123 instead of 82 sq ft of surface per pound of BOD applied daily. For small plants, such as Triangle, Va., the lift station, laundry-day peaks and other factors would indicate a factor of 250 percent.

• **Air Requirements** – Another important factor mentioned by Simpson is amount of air required to satisfy BOD in aerators. He has assumed oxygenation efficiency of air diffusers, which varies with rate of air diffusion, temperature, dissolved-oxygen deficiency, surface agitation and other more complex factors.

It also seems reasonable to assume that DO must be provided to satisfy ultimate or both stages of BOD, which is considerably greater than that exerted in a bottle in five-days incubation as used in Simpson's calculations of air requirements.

Consideration must be given also to amount of organic matter removed with secondary sludge and amount of sludge which is decomposed and escapes as gas without utilizing DO from treated sewage. Valuable work has been done on this subject (The Methane Fermentation of Carbohydrates, G. E. Symons and A. M. Buswell, Jour. Amer. Chemical Soc 55:2028:1933; The Natural Purification of River Muds and Pollutional Sediments, G. M. Fair et al, Sewage Works Jour., 13:1209:1941; and Natural Purification Characteristics, F. W. Kittrell et al, SWJ Nov.-1947).

Plant criteria and costs

The article suggests additional comments on plant features, design criteria and construction costs that will be helpful to sanitary engineers. Among these items are:

Although the isometric drawing indicates a by-pass, it was not built at the insistence of the Virginia Health Department. This prevents discharge of untreated wastes.

Because it caused odor nuisance and served no useful purpose, the bar screen was removed two weeks after the plant was completed and put into operation.

A flame trap was installed on the gas-vent pipe.

An overflow pipe was included to discharge digester-supernatent liquid to primary-settling-tank influent. At more recent plants supernatant liquid is discharged to primary-unit effluent —a modification that contributes to increased settling efficiency.

• Plant Capacity—The Triangle, Va. plant was designed to treat domestic sewage from 160 people. But the housing project it serves is equipped with laundry facilities so that on washing days the plant is subjected to excessive loads. As a result of observing part-time operation, it was found that large amounts of digester supernatant liquid would have to be treated without chemicals.

Added to the adverse effect of excessive lift-pumping rates, these two factors indicated a much more liberal design per capita served than would be necessary for a larger gravity-flow installation.

• Loading and Efficiency Curve—Data for this curve were assembled by G. H. Herzik, Jr. (PUBLIC WORKS, Aug. 1948). These data were not recommended by Herzik as a basis for a reliable design curve. His article also indicated that amount of air consumed was estimated and not actually measured. Consequently the writer questions the validity of points used for the curve.

• Maximum BOD reduction—Simpson's curve suggested that maximum BOD reduction will be less than 90 percent for aerators. Even at Army installations—equipped with perforated-pipe diffusers—reductions in excess of 95 percent are reported as typical for properly operated contact-aeration plants (War Dept. Technical Manual TM-665 1945; and Original Report of the National Research Council Subcommittee on Sewage Treatment in Military Installations, 1946).

Tests made at the McGregor plant (Sewage Treatment at McGregor, Texas, W. P. Walker, Jr. Field Reports, Texas Health Dept. Sept. 1943) covered only a three-day period and include no actual measurements of sewage flow or air delivered. Also at the time of test the primary settling unit was extremely septic.

Another series of tests on this plant (An Experimental Study of the Hays-Schulhoff-Griffith Aeration Processes of Sewage Treatment, Louis Pachon, Graduate Thesis, Texas University, June 1944) showed that actual air usage required to produce same overall efficiency was less than one-half of that estimated by Walker. Plate surface was also shown to be less than Walker's estimate. This difference would affect the efficiency curve.

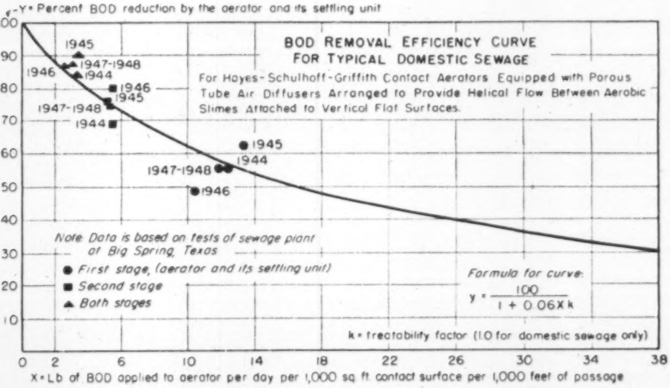
These tests revealed that plate area, taken from the plans by Walker, was changed during construction.

From these facts, it can be seen that Simpson's calculated loadings were not based on measured flow and that detention periods are likely to be inaccurate.

Walker's field report is excellent for a general appraisal of the process. He did not, however, intend that his estimates should be utilized as actual measurements.

The writer feels that the McGregor field report is typical of those made for the other four plants, with the possible exception of the Big Spring plant. Each of these reports accurately shows overall BOD reduction during a very short test period but most of other reported data was taken from plans and specifications (changed in some instances during construction).

Unless the true purpose and coverage of the field reports is understood and clearly shown, other design curves may be suggested without evaluation of the operational data on the assumption that it has been carefully investigated and found acceptable.



CONTACT-AERATION TREATMENT EFFICIENCY for a two-stage plant handling only domestic sewage may be estimated from this curve.

• Construction Costs—Simpson's conclusions as to construction costs for this type of plant do not appear to be consistent with prices for similar plants built in Virginia and Maryland. The Triangle project had a high per-capita cost but consideration must be given to its size, over-design for laundry loads, and over-capacity lift station. Costs of small sewage plants, furthermore, are greatly influenced by the designer's skill and experience. Costly concrete structures can often be simplified.

Some construction costs for so-called "Griffith treatment plants" are:

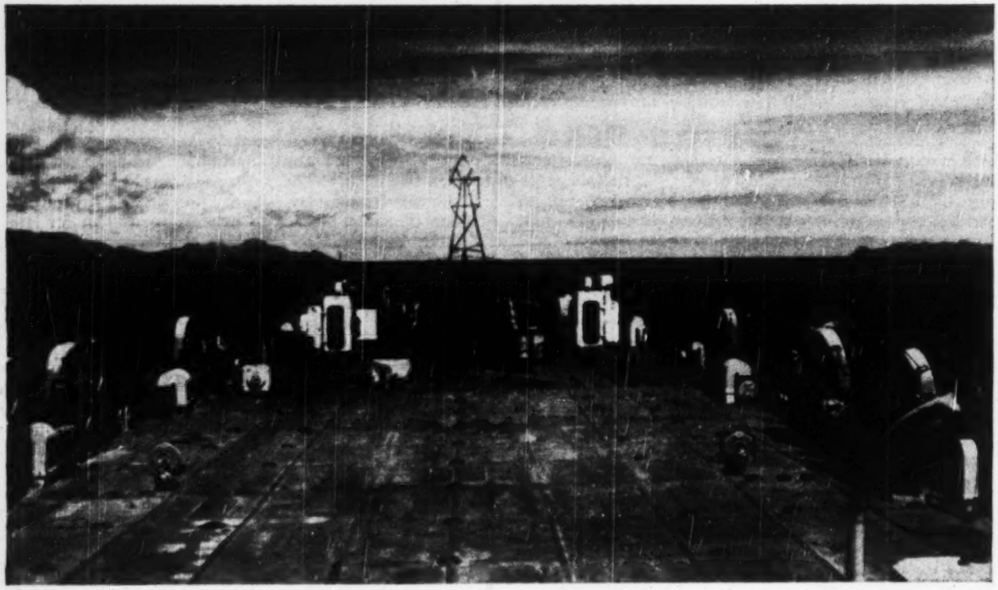
1. Manassas, Va., licensed to serve 3,500 persons with semi-automatic operation, control house, laboratory, and chlorination—$29 per capita.
2. Vienna, Va. licensed to serve 2,500 persons with semi-automatic operation, control house, laboratory, and chlorination—$25 per capita.
3. Twin Brook Development, Md. licensed to serve 1,000 persons with hypo-chlorinator, blower house and operator house but not including rock excavation—$25 per capita.

Unit costs include fees and license charged for the right to use the Hays-Schulhoff-Griffith contact-aeration process. The three plants are overdesigned on the basis of Texas' practice, a fact that accounts for some of the added cost.

• Conclusions—Simpson has shown that the process is sound, capable of high efficiency, simple to operate and free of odor and fly nuisance. He has indicated (first reference above) that operating labor cost is low but that first and power costs are high. He does not show, however, how much of the first cost represents over-sized lift station or how much of the power cost should be charged against the lift station and other consumers on the meter.

I also feel that Simpson's article proves that complete-treatment plants of this type are practical for small developments. Furthermore, it justifies my conclusions regarding performance of this process (ENR Jan. 28, 1943, p 60).

These investigations have convinced me that air requirements cannot be correctly determined with the present knowledge of the subject. They can, however, be estimated with reasonable accuracy after determining rate of oxygenation, of oxygen utilization, and of deposition of sludge—if mechanical factors involved in each instance are properly evaluated.



TRANSIT TARGET mounted on bow of LST is covered with two-colored cloth when used in shore-ship triangulation to plot distant island coastlines.

Shore-Ship Triangulation Speeds Island Surveys

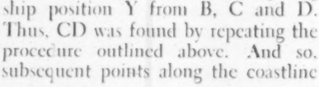
In post-hostilities mapping of South Pacific islands, the Army's 30th Engineer Base Topographic Battalion has plotted dense jungle shores by shore-ship triangulation—sighting a target carried on a drifting LST (Landing Ship Tank).

This method required that only the nearest adjacent instrument positions be visible from any given instrument position on shore. Using three shore positions simultaneously, it is estimated to have saved two-thirds the time and cost of a conventional traverse in the rugged, roadless terrain of the islands.

Landing craft—readily available as temporary off-shore triangulation points—mounted a cloth-covered target that could be easily viewed from any three consecutive control points ashore, such as A, B and C. Naturally, the LST drifted with wind and tide; but, by synchronizing shots on the target by radio communication among instrumentmen, errors of timing were minimized.

• Procedure—To start: Line AB (see sketch) was measured as a base line with an astronomically determined location and azimuth. Angle ABC was turned and measured by the instrument set up at B. Then transits at A, B and C were sighted simultaneously on the off-shore target X. From X they were turned respectively through angles XAB, XBC and XCB. With these measured and the angle ABC and side AB known, BC could be calculated.

BC then became the known distance in triangles formed by sighting ship position Y from B, C and D. Thus, CD was found by repeating the procedure outlined above. And so, subsequent points along the coastline were located by sighting further ship positions.



EACH SHIP POSITION was sighted simultaneously from three adjacent shore points. Angles were measured and triangles solved.

At each position there were 16 sets of readings made—time of each set being controlled closely by radio contact. This made possible 16 separate calculations of line BC with the ship drifting about X, 16 solution for CD with the ship at Y. In these groups of 16 independent calculations, it was seldom necessary to rule out more than two or three results as completely erroneous.

All others were averaged to obtain final values.

• Accuracy of results—In general, accuracy of third order surveying was bettered. After occupying about 30 ship positions, the survey was tide into a measure base line of known astronomic azimuth.

Shore-ship triangulation was used for stretches of coastline 100 miles and more in length. Together with relatively few in-shore positions and elevations, some level lines and short traverse lines to picture points, it produced adequate survey data for accurate large-scale maps.

As battalion commander, Lt. Col. W. C. Hall was in charge of the project.

READER COMMENT

"100 Percent Right"

Sir: Your editorial, "Salute to Success" in the News-Record of February 16th with respect to the seventy-five year contracting record of Winston Brothers Company of Minneapolis is a splendid tribute to a distinguished organization.

You ask "What are the requirements of long life in the construction business?" and answer that "A standout for first place is integrity—the will to do a job according to promise come what may; the constant attempt to exceed promise." Then, you mention the great value of a slowly built up skill.

You are 100 per cent right. Contractors who become outstanding and highly respected always insist on "quality workmanship" even if it must be done sometimes at a loss. Shoddy and inferior work is abhorrent to such men and their influence pervades their organizations.

As Emerson said, "An institution is but the lengthened shadow of a man." There is no better example than a time honored contracting or engineering organization.

HARRY O. LOCHER
Secretary and Treasurer
The National Association of
River and Harbor Contractors,
New York, N. Y.

Carbide-Insert Bits

Sir: Referring to "Carbide-Insert Rock Bits" (ENR, Feb. 9, p. 35) the removable rock bit made with tungsten carbide inserts brazed in place has established itself in the rock drilling industry beyond any doubt. The number of sizes made are continually increasing with the range extending from 1¼ in. to 3 in. for bits in general use with the most popular sizes between 1⅜ in. and 2 in.

It has been estimated that the carbide insert bit should give a total footage life ratio of 100 to 1 against the older type of multi-use steel removable bit in order to pay out, and this ratio has been obtained in a number of properties. In other locations, the carbide insert rock bit is used apparently with complete satisfaction by the operators at a ratio of only 30 to 1. This indicates that the total footage obtained is not the sole answer as to whether the carbide insert bit should or should not be used, but that there are several other sides to the question, which must be studied carefully by the operator before making his final decision.

Maximum footages for individual bits cannot be obtained without careful preliminary planning and watchfulness all along the line. The practice of drilling constant-gauge holes to depths of 20 and 30 ft and more with single constant-gauge bits has largely been discontinued. Pinching, which invariably resulted with its excessive chipping of the carbide insert, materially reduced bit life; also the continual changing of the carbide insert bit from one steel to another reduced thread life considerably and increased chances of incidental damage due to wrench slippage and hammering.

• **Alloy steel not needed**—It was thought at first that alloy hollow drill steel would have to be used in order to stand up comparably with the life of the carbide insert, but actual practice has shown that the standard analysis carbon hollow drill steel previously in general use, if properly fabricated and heat-treated according to published instructions, will do as good a job and in many cases a better job than the alloy hollow drill steel. Because of this there seems to be little point in recommending the alloy hollow drill steel for the public unless the operator himself has a particular interest in using it.

The importance of proper regrinding of the dulled carbide insert bit cannot be overstressed. Drilling with a dull bit on which a flat of 3/32 in. to ⅛ in. has developed on the carbide cutting edge will not only slow up the drilling, but will also result in excessive breakage of the bits, steels and drilling equipment parts. At the same time, excessive grinding of the carbide inserts will result in a loss of life of the carbide from 20 to 40%. For instance, grinding of the carbide so as to result in excessive heat followed by quick cooling in water usually gives 100% failure. The point is, the grinding machine operator must be a person who can be depended upon to follow a sequence of operations laid out for him by someone who knows the process. The equipment, too, must be in good repair, with fixtures properly designed for the purpose. The carbide-insert bit because of its potential value as a high-class drilling tool deserves to be treated as such.

• **Accountability necessary**—This same line of reasoning applies to the use of the bit. In any drilling operation, it is an excellent idea that some one individual be charged with the control and proper use of the carbide-insert bits, and if the property is large enough, a supervisor of bits can be appointed. A further suggestion is that each bit should be identified in some manner and the individual bits be charged to individual drill operators. Responsibility for performance is thus established and we know that where this has been tried greatly increased life of carbide insert bits has resulted.

In certain properties, bit life has been doubled merely by switching drilling crews, but using the same bits with the same equipment in the same headings. This shows that labor conditions have more to do with the successful operation of these bits than any other one thing. At the same time, we must never lose sight of the fact that the carbide-insert rock bit is of necessity an assembled product and, therefore, is mathematically susceptible to greater variation in total operational life than is the older single-piece multi-use steel bit.

Manufacturers of the bits and manufacturers of the carbide inserts are all striving to improve the quality of their product and the bit users can expect continuing improvement, so that ultimately with their cooperation, the carbide insert rock bit will attain the position for which it was developed, that of a high grade precision-made drilling tool.

JOHN B. BAKER
Chief Products Engineer
The Timken Roller Bearing Co.
Canton, Ohio

Practice by Corporations

Sir: It may be of interest to engineers to know that the State Corporation Commission of the Commonwealth of Virginia, by an informal opinion, considers engineering to be a profession. On this premise charters to corporations to engage in engineering will no longer be granted.

The engineers and architects board was established in Virginia in 1920, but charters to corporations to engage in engineering and also architecture were granted for many years after this, and one prominent firm has a charter granted in 1934. The tide is slowly turning but has it the power to make the grade?

It would be interesting to know the percentage of the technical engineering business in the state that is performed by corporations and the percentage of business performed by professional engineers, as this is the measure of the status of engineering as a profession. So long as corporations can step between the owner and the profession, engineering will be a business and not a profession.

R. B. MACFARLANE
Richmond, Va.

BOOK REVIEWS

Concrete Manual Revised

Concrete Manual—Fifth Edition. Prepared by the engineers of the U. S. Bureau of Reclamation under the direction of Leslie N. McClellan, chief engineer. 489 pp. Obtainable from the Bureau of Reclamation, Federal Center, Denver (Attention 841), or the Superintendent of Documents, Washington 25, D. C. $1.75.

Numerous changes have been made in this manual since the fourth edition was issued in 1942, and there have been several additions. These include: instructions in the use of air-entrainment in concrete; data on the occurrence and use of pozzolans and their effect on concrete; new information on the occurrence of alkali-aggregate reactions in concrete and on means for preventing concrete deterioration; and new procedures for concrete repair, for sampling sealing compounds and mastic fillers, and for determining the air content of concrete.

The pocket size and flexible binding have been retained to facilitate field use of the manual.

Heating and Air Conditioning

Heating, Ventilating and Air-Conditioning Fundamentals—Second Edition, by W. H. Severns and J. R. Fellows. 666 pp. John Wiley & Sons, New York; Chapman & Hall, London. $6.50.

Radiant Heating—Second Edition, by T. Napier Adlam. 504 pp. The Industrial Press, New York, N. Y. $6.

The new editions of both books have been revised to bring them up to date and to include additional material. In the first, nearly 200 pages have been added on warm-air furnace heating, hot-water heating, panel heating, refrigeration, air purification, estimating cooling loads and air conditioning. Also, data and design methods for panel heating and for summer and all-year air-conditioning have been incorporated. Additions to the second book include information on snow melting and electrical radiant heating.

An Amazing Construction Feat

The First Transcontinental Railroad By John Debo Galloway, 319 pp. Simmons-Boardman Publishing Corp., New York 7. $5.

To an engineer interested in early railroads, this is a fact-filled fascinating account of the building of the Central Pacific and Union Pacific railroads. The author, an honorary member of ASCE, compiled the text as a hobby in the years just preceding his death in 1943. Much of the information came from files of the Union Pacific not available to earlier authors.

The story of these railroads has been told many times. However, few authors approached the Herculean project with the same appreciation of the problems involved as has Galloway. You are left with the firm belief that building this first transcontinental railroad was truly the greatest engineering feat of the 19th Century.

The book is well organized. After a general three-chapter introduction, each railroad is systematically analyzed. Chapters for each discuss the men involved, the company organization, the location problems and the construction job.

Manual for Contractors

The Business of Home Building—Edited by B. K. Johnstone and C. E. Joern. 286 pp. McGraw-Hill Book Co., New York, Toronto and London. $4.

Twelve authors experienced in building construction contributed chapters on the Business Side of Housing. Topics treated include land development, financing, job organization, cost control, sales and law. The book is intended as a guide to the small builder.

New Engineering Books

Engineering Economic Analysis—Second Edition. By Clarence E. Bullinger. 397 pp. McGraw-Hill Book Company, New York 18, Toronto, London. $4.00.

Engineering Mechanics—By Archie Higdon and William B. Stiles. 505 pp. Prentice-Hall, Inc., New York 11. $6.65.

Electric Arc Welding—Procedure and Practice—544 pp. Hobart Trade School, Troy, Ohio. $3.00.

Uriah Lott: Dauntless Pioneer and Man of Vision—By J. L. Allhands. 187 pp. The Naylor Co., San Antonio, Texas. $2.95.

Patent Tactics and Law—Third Edition. By Roger Sherman Hoar. 352 pp. The Ronald Press Co., N. Y. $7.00.

Handbook of Rigging—By W. E. Rossnagel. 321 pp. McGraw-Hill Book Company, New York 18, Toronto, London. $4.75.

The First Transcontinental Railroad—By John Debo Galloway. 319 pp. Simmons-Boardman Publishing Corp., New York 7. $5.00.

La Matematica Dell'Ingegnere e le Sue Applicazioni—Volume Primo. By Guido Fubini and Giuseppe Albenga. 498 pp. Nicola Zanichelli Editore, Bologna, Italy.

The Mechanical Properties of Wood—By Frederick F. Wangaard. 377 pp. John Wiley & Sons, New York and Chapman & Hall, London. $6.00.

That Man Thomson—By R. H. Thomson, former city engineer of Seattle. University of Washington Press, Seattle, Wash. 134 pp. $2.75.

Layout Planning Technics—By John R. Immer. 430 pp. McGraw-Hill Book Co., New York 18, Toronto, London. $5.00.

Production of New Housing—By Leo Grebler. 186 pp. Social Science Research Council, 230 Park Ave., New York City. $1.75.

Contracting As A Profession—By Frederic W. Lord. 83 pp. Richard R. Smith, 120 East 39th St., New York 16. $2.00.

Farm Structures—By H. J. Barre and L. L. Sammet. 650 pp. John Wiley & Sons, New York 16; Chapman & Hall, Ltd., London. $7.00.

Building Construction Employers' Association of Chicago, Inc.—Official Directory and Guide, 1950. Published by the association, 228 North La Salle St., Chicago. 362 pp.

Der Stahlbetonbau—By Rudolf Saliger. 644 pp. Franz Deuticke, Helferstorferstrasse 4, Vienna 1, Austria. $15.18.

Concrete Manual—Fifth Edition. U. S. Bureau of Reclamation. 489 pp. Obtainable from the Bureau of Reclamation, Federal Center, Denver (attention 841) or the Superintendent of Documents, Washington 25, D. C. $1.75.

The Business of Home Building—A Manual for Contractors—By B. Kenneth Johnstone and Charles E. Joern. 289 pp. McGraw-Hill Book Co., New York 18, Toronto, London. $4.00.

Reports and Pamphlets

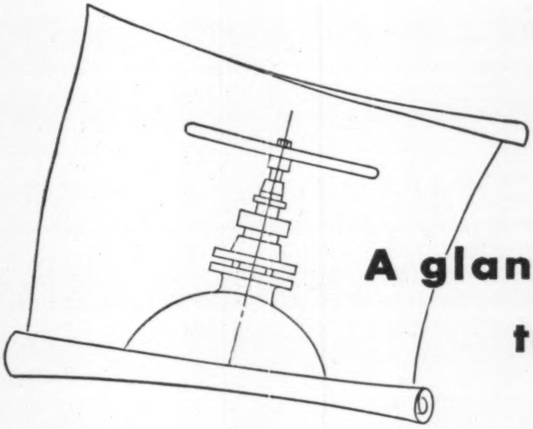
Dimensional Analysis—Engineering Experiment Station Series No. 73. Virginia Polytechnic Institute, Blacksburg, Va.

Thickness of Flexible Pavements—Current Road Problems—No. 8-R. Revised Edition. Highway Research Board, 2101 Constitution Ave., Wash. 25, D. C.

Engineering Use Of Agricultural Soil Maps—Bulletin No. 22. Highway Research Board, 2101 Constitution Ave., Wash. 25, D. C.

Compaction Of Soil—Bulletin No. 23. Highway Research Board, 2101 Constitution Ave., Wash. 25, D. C.

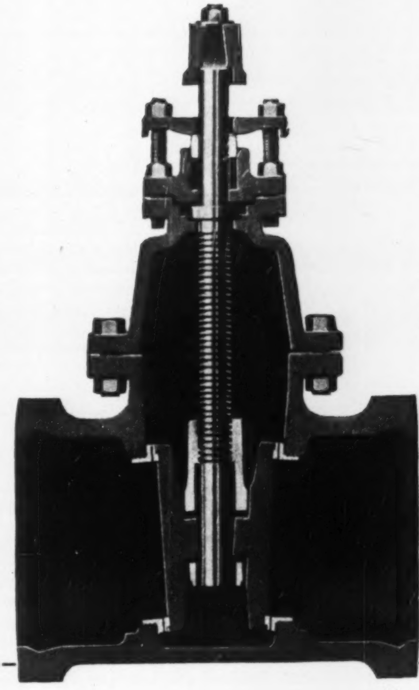
Welded Track—Department of Railways, New South Wales, Australia.



A glance at the blueprint tells the story

ONE LOOK at the design of R. D. Wood Gate Valves and you know they will deliver superior service—they are so simple, rugged and foolproof. An important feature is that there are only three working parts—the spreader and two discs. No small wedges or delicate devices to fail in an emergency. No pockets to fill up with sediment or scale. The valves are fully bronze mounted, all surfaces making a tight seal. They close completely and open fully. In closing, the gates descend opposite the seats before the spreading action is applied. In opening, they move free of the seats before rising into the bonnet and permit unobstructed flow.

Made of thoroughly seasoned castings, rigidly inspected, and tested to 300 pounds hydrostatic pressure, R. D. Wood Gate Valves conform to A.W.W.A. specifications. They are a safety-plus factor for every modern community. Write for complete information today.



R. D. WOOD COMPANY

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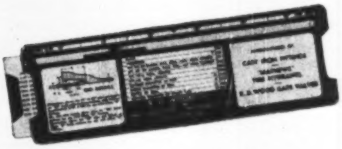
Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (centrifugally cast in sand molds)



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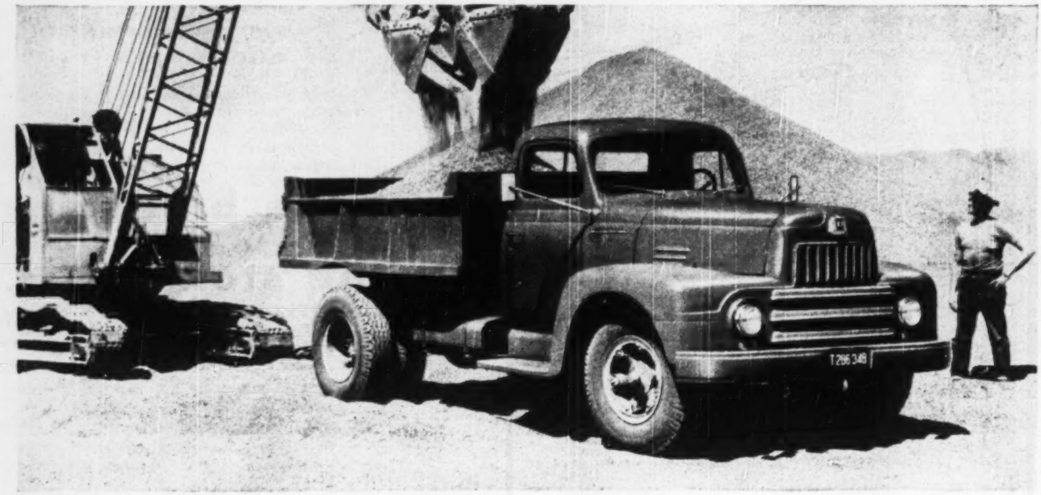

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ARE *Heavy-Duty Engineered* TO SAVE YOU MONEY

Heavy-duty engineering for long truck life on tough truck jobs is yours now in every single new International Truck from 4,200 to 90,000 pounds GVW.

That's the same extra value engineering that has kept Internationals first in the sale of heavy-duty trucks for 18 straight years.

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You'll get an all-new truck proved under actual operating conditions

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No matter what kinds of roads or loads, climate or conditions your trucks must meet, there's a new International that has been *proved* right for your requirements.

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INTERNATIONAL TRUCKS

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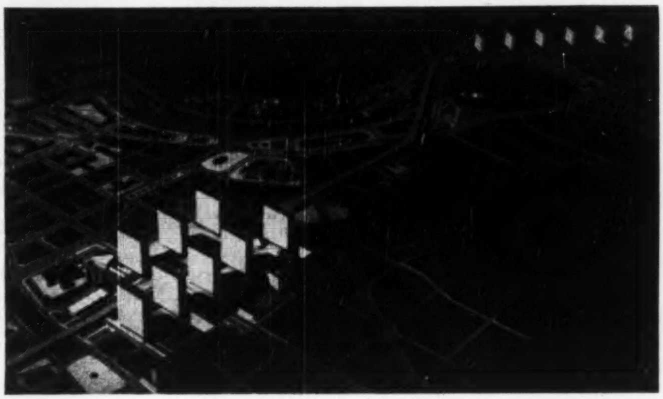
DEVELOPMENTS ABROAD



PROPOSED RIO BUILDINGS—Above is a reproduction of the architect's model showing the buildings projected on the Morro de Santo Antonio site, including the 2,600-ft-long, 12-story apartment building, with its six right angles, and the eight 30-story business buildings.

To remove 210-ft. hill in Rio face-lifting job

A considerable construction job which will greatly alter the face of the beautiful but traffic-bound city of Rio de Janeiro, Brazil, is scheduled to start soon. It involves these four operations:

The demolition of the Morro de Santo Antonio, one of Rio's downtown hills; dumping the material along the shoreline to make an express highway; erection of a 2-mile elevated concrete highway through the place where the hill stood; construction of large apartment and office buildings, parks and underground garages on the flattened and filled in areas.

The project, submitted to interested Brazilian and foreign contractors for bids, is a variation of one proposed some time ago. (ENR Nov. 20, 1947, vol. p. 700) The most important change is that the route through the business area is to be elevated instead of at ground level.

The hill to be removed is 210 ft high and its base covers about 67 acres. An estimated 6,500,000 cu yd of material, 20 percent rock, will have to be moved. On the ground thus cleared, it is proposed to erect eight 30-story office buildings, one 12-story apartment building 2,600 ft long, and many 2 and 3-story business buildings. The long apartment house, for 8,000 people, will cover four city blocks and have six right-angled bends. Cross-traffic will pass beneath it.

The excavated earth and rock will be dumped into the harbor along the shoreline on Avenida Beira Mar and Praia do Flamingo, making a new strip 550 ft wide. On this fill a new highway will be built to ease traffic between the business center and the suburbs of Copacabana, Ipaneman and Leblon.

The southern residential district will have a rapid automobile link by means of an overhead highway to be known as Avenida Norte-Sul. It will be two miles long and 78 ft wide, providing three traffic lanes in each direction.

In tearing down the Morro de Santo Antonio, the convent of Santo Antonio on one slope and old stone arches of a former aqueduct will be spared.

Design of the whole project was made by City Architect Alfonso Eduardo Reidy.

Verse Reservoir in Ruhr to be finished this year

Work on the earthen dam with concrete core for the Verse water reservoir in the Ruhr Basin, Germany, with a capacity of 25,200 af, will be finished this year. With the new Bigge reservoirs, when completed, this will augment the stored volume for the district by nearly 50 percent.

The Verse reservoir was started in 1929, but work was interrupted in 1936 by money and labor shortages. It was completely stopped in 1944 on account of the war, but was resumed in the autumn of 1948.

For the domestic and industrial use of the district's 4,500,000 residents, the daily water extraction from the

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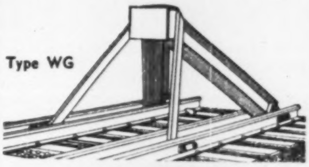

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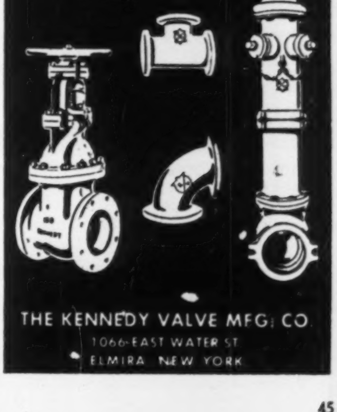

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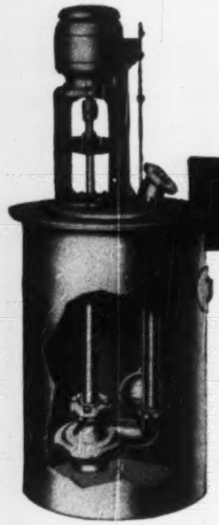

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Each of these well designed, well built pumps is an acknowledged leader in its field, a fact which effectively guarantees dependability and trouble-free performance.

A full range of capacities from 10 to 5000 gpm. Heads to 75 feet.

To aid architects and engineers in selection of the proper pump for any installation, Yeomans maintains competent sales and service representatives in 50 cities. This organization makes available to you more than fifty years of Yeomans experience in analyzing pumping problems.

Sweet's Architectural and Engineering Files contain full information. Also available for your own Reference Files are helpful bulletins containing complete selection and installation data.

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Ruhr River is at present nearly 750,000,000 gal. (about 2,300 af). The existing 12 water reservoirs with a capacity of 206,000 af are sufficient to meet requirements.

At present in Germany, the earthen dam with concrete core is preferred to the masonry gravity wall type dam because of lower cost, increased stability, greater safety, and the possibilities for camouflage against air attack. The Sorpe water reservoir in this district was built in the same manner as the Verse project and it remained undamaged during several bombardments in the war.

To prevent water passing through the wall and under the bottom, a concrete apron is built several feet into the rock and both sides of the concrete wall are waterproofed. The earthen bed, 3 ft wide on top and 32 ft 9 in. wide at the bottom, is composed of selected gravelly clay, while on the other side mortared packings of broken stones with drainage pipes are built up to absorb any water leaking through the clay bed and concrete core.

The river embankment has a grade of 1 to 2½, and is paved by stone facing in cement. The grade of the inshore part of the earthen dam is 1 to 1½ to 1 to 3. Vertical expansion joints 40 to 50 ft. apart are arranged in the concrete wall, while the top of the dam is protected against inundations by elevated slopes. Any movements of the water can be observed and checked with the aid of shafts and a chamber built inside the concrete wall along the whole length and near the bottom.

The poured plain concrete core of Verse will have a total length of 1050 ft; the width of the top 5 ft 10 in.; bottom, 19 ft 8 in.; its volume, 72,000 cu yd. The dam will have a top width of 52 ft 6 in., bottom 1033 ft; height over rock foundation 197 ft., and total volume, 1,770,000 cu yd.

Filling of the reservoir will not be finished till the end of 1952, as the average yearly inflow is 14,600 af.—Wm. Lesser

Irrigation

Colombia—Utah Construction Co. of San Francisco, Calif., Sociedad Industrial de Ingenieria y Construcciones (Sideico) of Bogota, and Olarte, Ospina, Arias y Payan of Bogota have been awarded the contract for construction of the irrigation works in the Coello River valley, Tolima Department. Cost is estimated at 8,000,000 pesos ($4,120,000). About 37,000 acres will be irrigated. The project is expected to be completed within 27 months.

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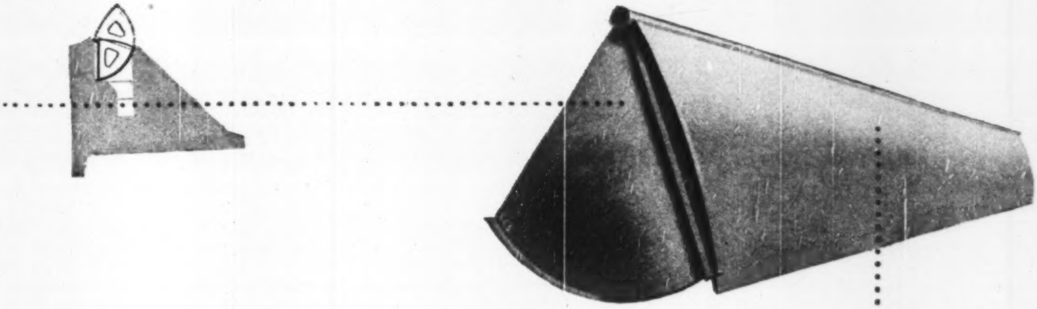

To provide 4 feet of adjustable control at the top of a 12-foot concrete spillway section, the Huron-Clinton Metropolitan Authority specified a 90-foot drum gate. The final design called for fabrication of three 30-foot all-welded water-tight sections using nickel-clad parts where difficult to paint or when subjected to corrosion or wear. The structure provided maximum stiffness, minimum weight, ease of operation, excellent appearance and an assurance of long trouble-free life.

Benefits like these come from looking beyond mere structural design toward considered materials buying, accurate evaluation of fabrication and erection costs, appearance requirements and a host of similar factors. Such an approach to the *total* problem posed in engineering structures or equipment we term Lukenomics. Lukenomics brings to bear not only Lukens own products, services and knowledge of materials but marshals, as well, industry's skilled consultants, structural shops and equipment manufacturers.

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This drum-type gate structure was fabricated by R. C. Mahon Company, of Lukens Nickel-Clad Steel and erected at Kent Lake Dam on the Huron River, a recreational area under development by the Huron-Clinton Metropolitan Authority of Michigan. Ayres, Lewis, Norris & May, consulting engineers.

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MEN AND JOBS

N. M. Gamble has been appointed civil engineer of Brentwood, Mo. He formerly was employed by the Wabash Railroad.

Milton H. Beuhler, Jr., and **J. C. Daniel,** rodent specialists of the U. S. Public Health Service, have been assigned to help city and county health departments in Oregon in setting up permanent measures for rat control.

Tom H. Webb, a 30-year veteran of the Texas highway department, will become principal advisory engineer on modified service. He has been assistant state highway engineer. **Howard L. Arno**, assistant construction engineer, has been named to direct the personnel division. He is a civil engineering graduate from Texas A. & M. College. He joined the department in 1933. **George B. Finley**, maintenance engineer, resigned from the department to work for the Asphalt Institute.

Henry J. Graeser, Jr., assistant chief engineer in the maintenance and utilities division of the U. S. Army with supervision of sewer and water systems at all Army posts at home and abroad, headquarters at Washington, D. C., has been appointed assistant water superintendent of Dallas, Tex. He served as sanitary engineer of Bryan, Tex., for three years after his graduation from Texas A. & M. College in 1938.

H. E. Noell, a former division engineer of the North Carolina State Highway & Public Works Commission at Shelby and Greensboro, N. C., has gone with the E. H. Hines Construction Co., Greenwood, S. C., to represent it in Western North Carolina at Shelby.

E. A. Gailbreath is first assistant road engineer of Jefferson County, Ky.

I. M. Wardle of Ottawa, Can., has been named director of public projects in the new Ministry of Resources and Development; **H. G. Cochrane** is in charge of the Trans-Canada Highway project; **C. V. F. Weir** is chief of the engineering and construction services.

George M. Garrett, district engineer of the Ft. Worth district, Texas state highway department since 1945, has been made deputy state highway engineer. He has been with the department since his graduation from Texas A&M College in 1924, and a district engineer since 1935. **W. W. Finley**, assistant engineer for the district, was promoted to district engineer. He has been with the department since 1910 and has been assistant district engineer since 1929.

William F. Callahan, Massachusetts public works commissioner, has been renominated and confirmed, as were **William T. Morrissey** for Metropolitan District Commissioner; and **Thomas A. Flaherty**, Public Utilities Commissioner.

Richard Martin, right, and William Wise, director and chief engineer of Connecticut's Water Commission sparkplug one of the country's most energetic teams for stream pollution abatement.

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IN THE ROCKIES—The Colorado Fuel and Iron Corp.
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ON THE WEST COAST—The California Wire Cloth Corp.
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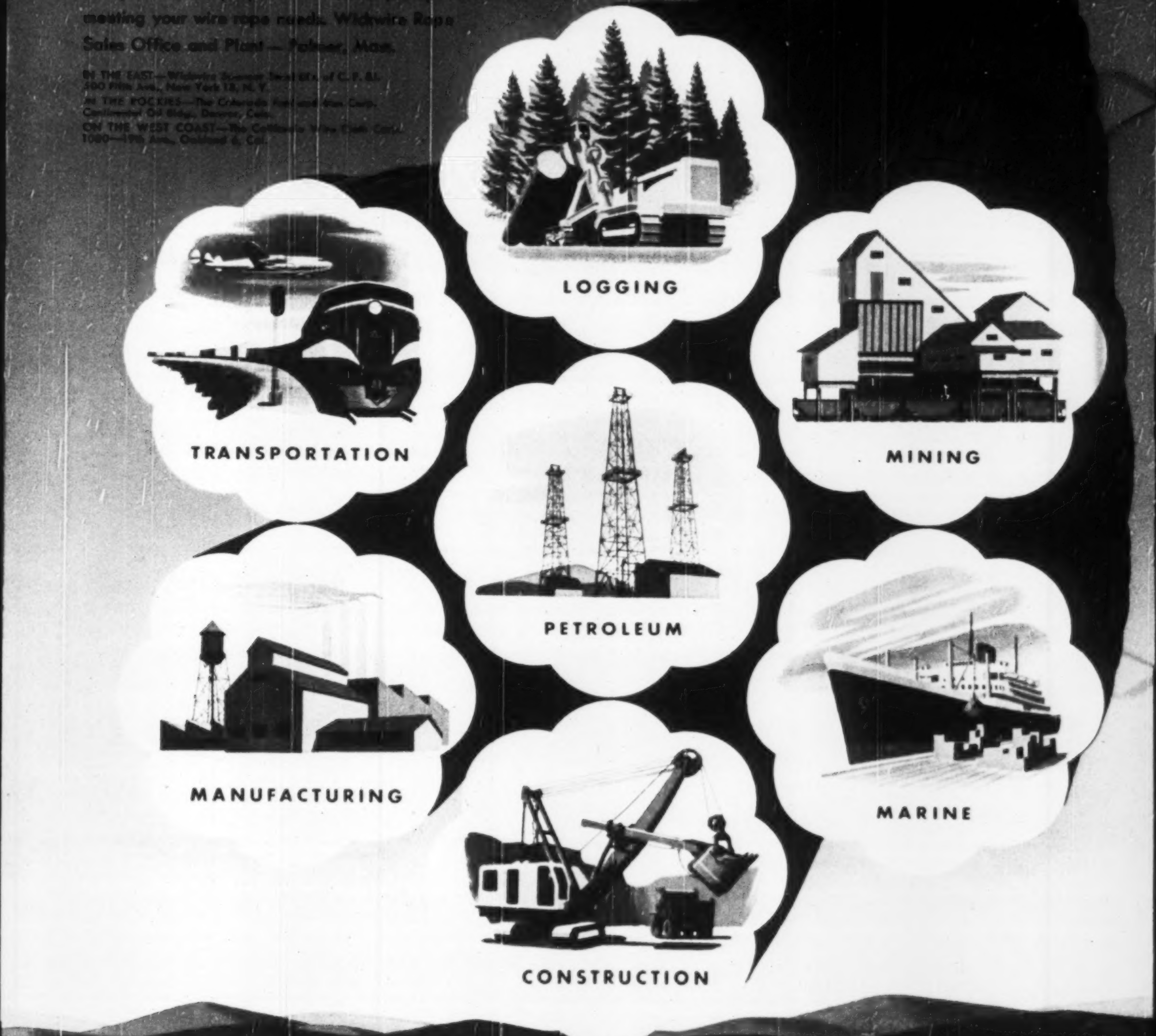
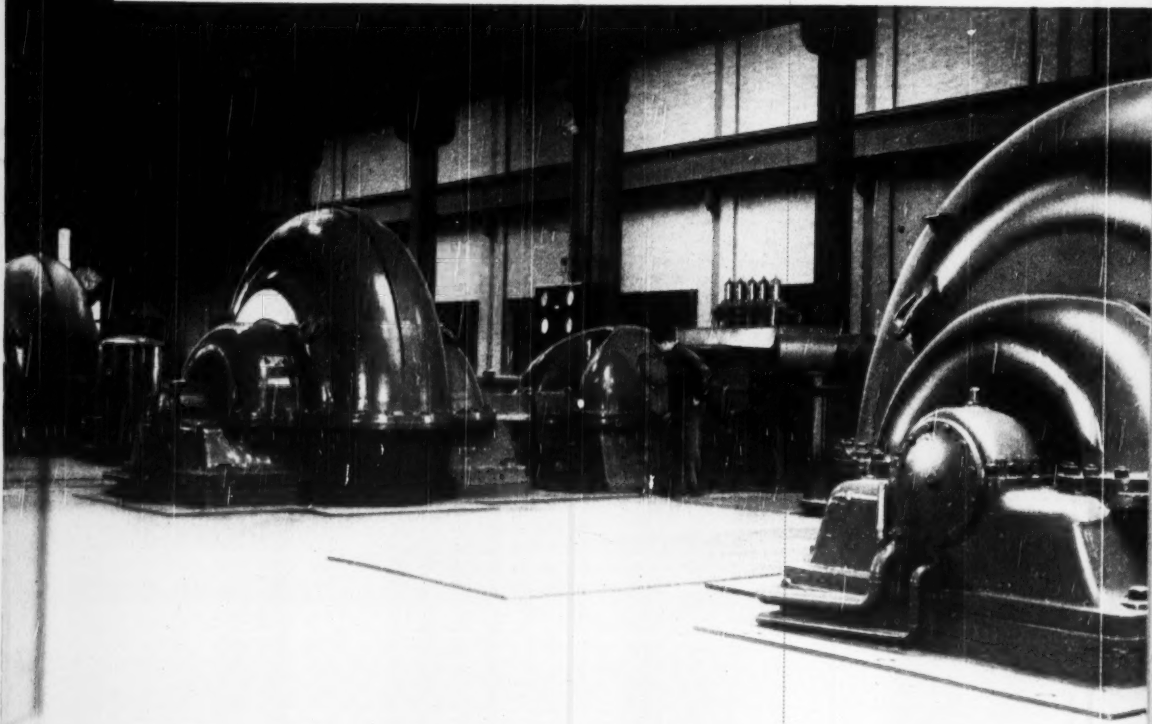
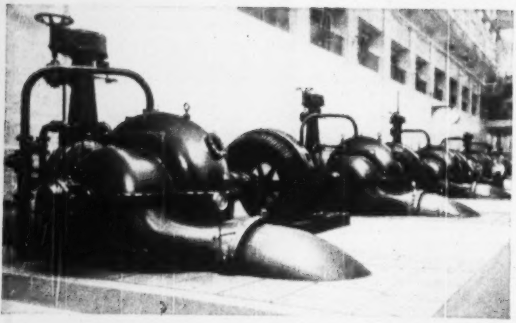

LOGGING
TRANSPORTATION
MINING
PETROLEUM
MANUFACTURING
MARINE
CONSTRUCTION
A. E. Brotman

Chicago Expands





SEVEN Allis-Chalmers motors and pumps handle sewage in Chicago's West Side Treatment Plant.

West-Southwest treatment plant adds two Allis-Chalmers Blower-Turbine Units

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Throughout Chicago's vast Public Works System you will find a wide variety of Allis-Chalmers equipment . . . turbines, motors, condensers, pumps, blowers, and electrical control and distribution apparatus.

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A-2940

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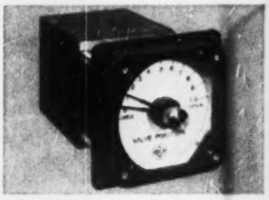
CHALMERS

News Notes

for Water and Sewage Works Men

INCREASED MECHANIZATION and simpler, more positive control of plant operations is today's goal in the design of water and sewage works. Below is a typical diagram, using Allis-Chalmers *Remote Control and Indicating System* that proves how such simplification can be secured.



Indicating meter for mounting on panel control board.

In a system like this, a single operator at a panel board can accurately control (± 1%) such factors as valve and gate openings, water levels, etc. and receive indications of their exact positions. The system can also be used for order telegraph.

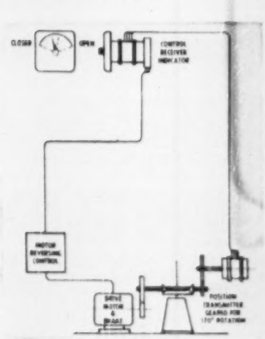

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Diagram of typical Allis-Chalmers Remote Control and Indicating System.

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MUNICIPAL AFFAIRS

Parking Plans

St. Louis, Mo.—A new law in Missouri, effective March 9, permits St. Louis to operate off-street parking facilities. To finance them, the city may use general revenue funds, including money derived from leases, or may make special benefits assessments against real estate in the affected area.

Royal Oak, Mich.—The city commission has authorized the establishment of two municipally-operated parking lots. The city manager has been instructed to provide for the issuance of $325,000 in revenue bonds to obtain and develop the sites.

Mansfield, Ohio—A citizens' committee has proposed the construction of a parking garage and auditorium and exhibition hall on the site of Central Park, to cost about $810,000. The two-story underground garage would accommodate more than 600 cars, and the auditorium would seat at least 6,000.

Akron, Ohio—A combination arena and parking building is being studied. It would have a 3-deck parking facility for 1,100 cars, the fourth deck to be used for a municipal entertainment and sports arena with seating capacity of 10,000. It was pointed out that the parking deck would be used much more at night by crowds attending events in such a building, guaranteeing additional revenue. The three-deck building without the arena was estimated to cost $1,446,000.

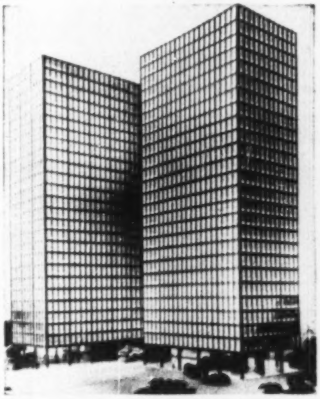
Youngstown, Ohio—Greater Youngstown Area Foundation is hiring engineers to make studies of a proposed mammoth parking project over the Erie Railroad tracks downtown, estimated to cost more than $6,000,000. The facility would be built in several tiers over the Erie's tracks between Fifth and Wick Avenues, and would be financed by revenue bonds. J. E. Greiner Co., Baltimore, will study design and construction of the facility, and Parsons, Brinckerhoff, Hall & Macdonald, New York, will make studies of traffic and potential revenue. Should the studies show the project to be economically feasible, city council will be asked to create a public authority to build and operate it.

Indianapolis, Ind.—The recently-created off-street parking authority announced that creation of temporary downtown parking lots would be its first goal. Establishment of the parking authority was authorized in 1949 by the Indiana General Assembly.

Parking Meter Test—Installation of about 300 more parking meters in downtown Indianapolis, Ind., is being planned by city officials. They will be put in on a trial basis. The city already has in use 542 parking meters of another type which have been averaging receipts of about $1097 a week since last September.

More Parking Units—Toledo-Lucas County, Ohio, plan commissions have approved a proposal that 1,000 additional parking units be provided for the downtown area, first by private capital if it will do so, and if not, by public development of facilities under the new state law.

Parking meter ads—Not satisfied with the revenue they get from parking meters, some cities are turning to advertisements on the parking meter uprights for additional income. Longview, Wash., has awarded a 5-year lease on meter advertising to a Seattle firm in exchange for 20% of the profits. Three advertising signs will be allowed on each upright.



OF GLASS AND STEEL—Excavation is under way for these twin 26-story apartment buildings of glass and steel at 860 Lake Shore Drive, Chicago. They will rise above concrete basements and sub-basements with garage facilities for 100 cars. Steel frame will be encased in concrete on the exterior beams and columns. Concrete will be covered with a quarter-inch thick steel plate skin, painted black. Windows of ¼-in. plate glass encased in aluminum frames will extend from floor to ceiling. Each building will have 289 apartments. Estimated cost is $5,650,000, financed by mutual ownership. Architects Ludwig Mied Van Der Rohe and C. B. Guenther of Pace Associates designed the buildings, with Holsman, Holsman, Klekamp & Taylor as consultants. Contract is held by B. W. Handler Construction Co.

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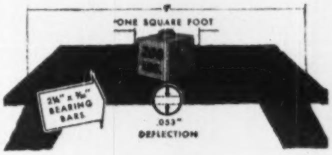

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EDUCATION AND RESEARCH

To study tidal action on sand deposits

Two University of California engineers, Prof. M. P. O'Brien, dean of engineering, and Prof. J. W. Johnson, a specialist in wave and tidal action, have chosen Santa Barbara, Calif., as a site for research on the relation of wave refraction and tidal action to sand deposits.

After consultation with Engineer Wallace J. Penfield, who has drawn plans for completion and enlargement of Santa Barbara Harbor, O'Brien and Johnson decided on the spot as a location for a wave recorder to facilitate the cataloging of measurements.

The project is a joint effort of the university and the U. S. Beach Erosion Board. O'Brien said the research is basic to the study and solution of many present beach problems.

The project will make studies to estimate and predict movement of sand in harbors and beaches. Because of previous dredging operations in the Santa Barbara Harbor, measurements are available on the total volume of sand involved. Sand flow in the harbor varies from 300 cu yd a day to as high as 1,500. Reasons for the variance are unknown. The coming study will seek an answer.

O'Brien said Santa Barbara was a particularly suitable location for the research because records of conditions and sand movements exist for the last 12 years.

Air engineering center

The air engineering development center planned to be set up near Tullahoma, Tenn., is expected to stimulate advanced research in every engineering school in the area.

After hearing Air Secretary Stuart Symington discuss plans for the big wind tunnel project, which may cost $150,000,000, educators representing the University of Tennessee, the Alabama Polytechnic Institute, Mississippi State College, and Tennessee Polytechnic Institute agreed that the air center will require men trained in highly specialized technical fields and that the institutes' research programs would be aimed toward cooperation and collaboration with the new air center.

Symington announced that the project, construction of which may start this summer, will be named the Arnold Air Engineering Development center in honor of the late Gen. H. H. (Hap) Arnold, wartime commander of the Army Air Forces.

College-highway officials cooperation in N.C.

Plans were discussed for effective coordination of the experimental and research facilities of the North Carolina State College school of engineering with that of the State Highway Commission and for cooperation of the school in the state's road building program at a conference of college and highway officials in Raleigh recently.

The meeting was arranged by Dean J. H. Lampe, of the school of engineering. He said: "We hope to make the school's facilities and research scientists available to offer technical services which may fill some of the needs in the road-building program now under way."

Governor W. Kerr Scott said that both the highway commission and the college may benefit from joint projects designed for improving the roads program.

After hearing outlined ways in which the research facilities of the college may be used in solving technical problems of the highway commission, the governor said he was glad to hear of possibilities of a cooperative experiment program and that the state may be able to advance plans for accomplishing this activity.

Dean Lampe, asserting that highway research demands more attention, expressed the belief that State College staff members should be used in devising solutions to technical problems hampering the road program and said that the school hopes to expand its services to the people through more research and through improved teaching.

Applied Mechanics—During the next two months, a series of applied mechanics seminars will be held at the school of engineering of the University of Massachusetts, Amherst. Among the topics to be discussed are "Hydraulic uplift pressures on masonry dams," "The behavior of buildings durings earthquakes," and "X-ray methods of stress analysis."

Guidance Plans—A student selection and guidance committee of the Delaware Engineers Association has been organized to provide counsel to young men and women of the state who may be considering engineering as a career. The committee will visit high schools and consult with students.

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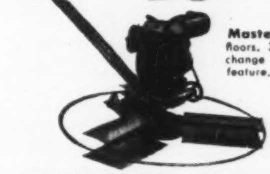

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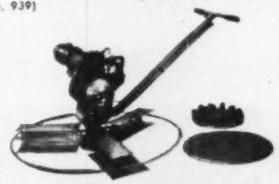

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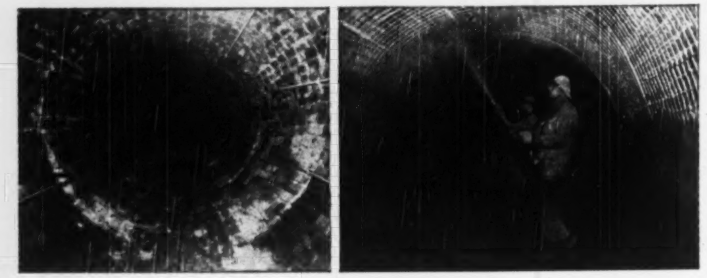

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ELECTIONS AND ACTIVITIES

Harry V. Miller, San Jose, Calif., engineer, has been chosen president of the San Jose chapter, California Society of Professional Engineers. He succeeds Walter Long, recently named state director, George Reynolds, vice-president; John MacDonald, secretary; and Arthur Wells, treasurer. J. Walter Smith, Lloyd Barnwell, and Paul Birmingham were elected directors.

George Nilson of the Nilson-Smith Construction Co. of Great Falls, Mont., has been elected president of the Montana Contractors Association, succeeding Dan J. Mooney of Butte, Edward O'Neil of Havre, vice-president; Bert Lalonde of Sidney, treasurer, and Ned Hergert of Helena, reelected secretary-manager.

F. Caldwell Greene was elected president of the Utica, N. Y., Builders Exchange, succeeding Augustus Miller. Other officers: John Harty, vice-president; T. P. Eldred, treasurer, and Charles A. Miller, executive-secretary. Directors, Theodore Borek, Rodney Hameline, Augustus Miller, John A. Schnitt and William F. Skelton.

W. C. Burnham is president of the Oklahoma section, ASCE; D. C. Benham, vice-president; and Jack Lothers, secretary-treasurer.

Ernest Hillman, of Hillman & Nowell, Los Angeles, consulting structural engineers, has been elected 1950 president of the Structural Engineers Association of Southern California. Donald F. Shugart was elected vice-president; R. J. Short, secretary-treasurer; C. M. Herd and John Minasian, directors. Other directors are Harry Bolin, past president; John Case and Lewis Osborn.

The Alabama Branch of Associated General Contractors elected the following officers: C. C. Wilborn, Birmingham, president; Houston A. Brice, Jr., Birmingham, first vice-president; C. F. Hooks, second vice-president. J. B. Rawls was reelected executive secretary.

Officers of the Oklahoma Society of Professional Engineers: President, Allan Craig; F. G. Fellows and R. F. Danner, vice-presidents; Cy Perkins, secretary-treasurer.

Thomas F. Delany, vice-president of W. J. Burns Co., general contractors, has been elected president of the Syracuse, N. Y., Builders Exchange. Other officers, William W. Nass, vice-president; George W. Sykes, treasurer, and C. J. Pollatsek, executive secretary.

B. W. Davis, of Raleigh, engineer with the Highway Commission, has been elected president of the North Carolina section of the American Society of Civil Engineers. He succeeds John D. Watson, of Greensboro. Other officers elected included J. Norman Pease, of Charlotte, first vice-president; Carroll L. Mann, Jr., of Greensboro, second vice-president, and E. B. Rice, of Raleigh, secretary-treasurer.

The New York Association of Consulting Engineers has re-elected William Eipel president and has admitted four new firms. Re-elected with Mr. Eipel were: John W. Hennessy, vice-president; Harry Bond, treasurer; W. Donald Christie, secretary. The new firms are: Jacob Feld, structural; Levy & O'Keefe, mechanical; Ernest F. W. Franck mechanical, and Wilcox & Erickson, structural.

MAJOR MEETINGS

Concrete Reinforcing Steel Institute, anual meeting, The Shamrock Hotel, Houston, Tex., March 20-25.

New Jersey Sewage Works Association, annual convention, Hotel Stacy-Trent, Trenton, N. J., March 22-24.

Highway Engineering Conference, University of Utah, Salt Lake City, March 29-31.

Western Public Works Congress, Hotel Leamington, Oakland, Calif., April 2-4.

Canadian Section, American Water Works Association, General Brock Hotel, Niagara Falls, Ont., April 3-5.

New Jersey Society of Professional Engineers, Essex House, Newark, N. J., April 14-15.

Highway Transportation Congress, Mayflower Hotel, Washington, D. C., April 25-27.

American Society of Civil Engineers, spring meeting, Los Angeles, Calif., April 26-29.

Maryland-Delaware Water and Sewerage Association, Fort Cumberland Hotel, Cumberland, Md., April 27-28.

Third Inter-American Congress of Municipalities, New Orleans, La., May 2-5.

N. Y. State Society of Professional Engineers, Hotel Statler, New York City, May 4-6.

American Society of Civil Engineers, Pacific Northwest Conference, Winthrop Hotel, Tacoma, Wash., May 5-6.

U. S. Conference of Mayors, Waldorf-Astoria Hotel, New York City, May 11-13.

Florida Highway Conference, University of Florida, Gainesville, Fla., May 11-23.

American Water Works Association, annual conference, Convention Hall, Philadelphia, Pa., May 21-26.

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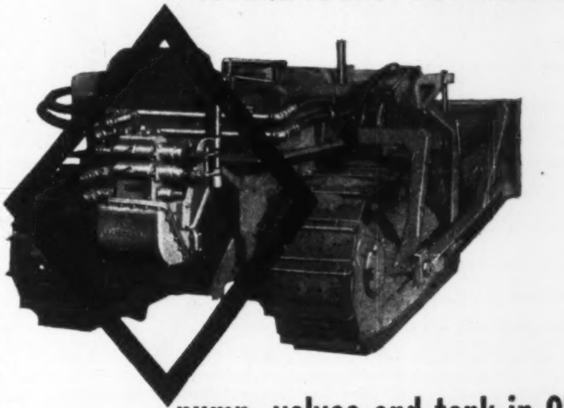

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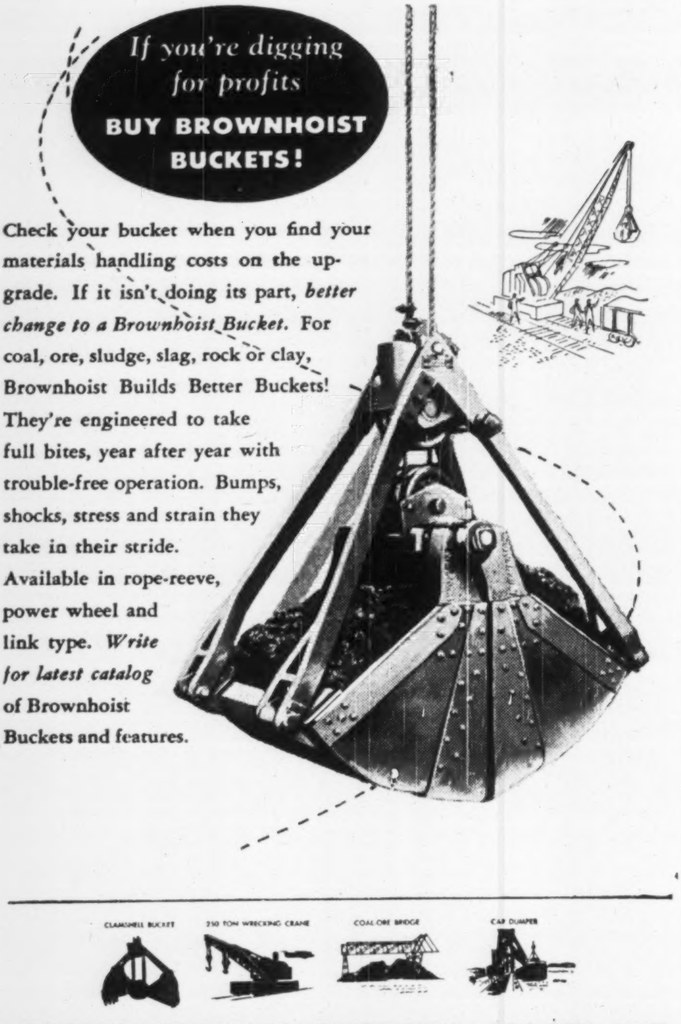
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OBITUARY

Clarence E. Seage, 61, structural engineer and consultant on many building projects in North and South America, died Feb. 6 while crossing the San Francisco-Oakland Bay Bridge, which he had helped design. Mr. Seage, who received an engineering degree from Pratt Institute, Brooklyn, N. Y., and did graduate work at Columbia University, was an assistant to Gustav Lindenthal on the design and construction of New York's Hell Gate Bridge before going to the San Francisco Bay area in 1921. He was one of the five senior designers of the San Francisco-Oakland Bay Bridge, and he planned and built 18 of the buildings on Treasure Island for the Golden Gate International Exposition of 1938-39. He was consulting engineer on McNary Dam on the Columbia River, and with his partner, Col. Ralph A. Tudor, he was co-designer and engineer of a bridge to be built across the Columbia at The Dalles.

Harry C. Cole, construction engineer, died Feb. 13 at Morgantown, W. Va. He was a graduate of the West Virginia University engineering school, 1898. He became assistant engineer in charge of the design of the Pacific division of the Panama canal in 1908 and later was named resident engineer and served until the canal's completion. He headed the Cole Brothers Construction Co., which was formed in Morgantown in the 1920's, primarily for road construction.

Olver Playfair Roberts, 61, divisional engineer for the British Columbia Department of Public Works at New Westminster, died Feb. 13. He was transferred in January from Nelson, where he had been divisional engineer.

Merle B. Mann, 61, for 31 years with the U. S. Corps of Engineers at Jacksonville, Fla., died in Murphy, N. C., Feb. 11.

Friedrich Bleich, 71, died in New York Feb. 17. He was a graduate of the Technical University of Vienna, Austria. He practiced in Vienna as consulting engineer until 1938, and was responsible for the design of many notable bridges. Since 1941 in this country, he was first associated with Albert Kahn, Architects and Engineers, Detroit. Subsequently he was engaged in research on the causes of the disaster of the Tacoma Narrows Bridge on behalf of the Advisory Board on Investigation of Suspension Bridges; since 1947 he was associated with Frankland and Lienhard, consulting engineers, and at the time of his death had nearly completed a survey on the buckling strength of metal structures, under the firm's contract with the U. S. Navy. The results of his investigations on suspension bridges are to be published. Advance copies of his recent reports on the Buckling Strength of Metal Structures have been distributed by the Column Research Council of the Engineering Foundation.

Hugh Hannan, 56, of New York, underpinning engineer on the rapid transit system of Toronto, Ont., died in Toronto Feb. 23. He was employed by the subway contractors, Pitts-Johnson-Drake-Perini, Ltd.

Wm. G. Wheeler, 63, secretary of the Building Trades Employers' Association of New York City for the last 22 years, died Feb. 21. His death came a few minutes after he had reported at the association's annual meeting at which he was re-appointed for his 23rd term. He was a graduate of Syracuse University.

John L. Quinn, 55, of Wakefield, Mass., died Feb. 13 in Chelsea. For 30 years he was a civil engineer for the Metropolitan District Commission, Boston.

Charles S. Leary, 64, former minister of public works for British Columbia, died Feb. 16 at Bradenton, Fla. He served at his public works post for 17 years. His home was Nakusp, B. C., where he was president of the Big Bend Lumber Co.

Aaron G. Levy, 65, chief civil engineer of the utilities department of Cleveland, Ohio, died Feb. 21. A city engineer since 1919, he played an important part in the development of Cleveland's waterworks. He was graduated from Tulane University in 1906, and for 12 years he was an engineer in the water department of New Orleans, La. He was a captain in the Corps of Engineers in the first world war.

Clyde W. O'Brien, 64, Dayton, Ohio, a city planning aide since 1945, and previously with the U. S. Engineers employed on wartime projects in Dayton, died Feb. 13.

Louis M. McDonald, 63, died at Welland, Ont., Feb. 18. He was a graduate of St. Joseph's University, St. Joseph, N. B., and studied civil engineering at McGill University, Montreal. He had been on the staff of the Canada Cement Co. for 31 years.

Edward S. Clifford, 77, retired city engineer of Buffalo, N. Y., died Feb. 22. Before his retirement in 1944, he had been employed by the city for 30 years. He had been an engineer on several Buffalo bridges and public buildings.

Frederick W. Hamilton, 82, who had spent all his working years in street and highway construction, died at Scottsville, N. Y., Feb. 14. Many of the early suburban electric lines out of Rochester, N. Y., were laid out by survey parties in which Mr. Hamilton was active. In the 1920's he joined E. A. Bonney in Hamilton & Bonney, contractors. During the war he had charge of road construction at several government ordnance projects.

Henry W. Welsh, 67, president of the Canadian Institute of Steel Construction and general manager of the Mackinnon Structural Steel Co., Ltd., died at Sherbrooke, Que., Feb. 19.

Edgar Vaughan, Sr., 77, retired civil engineer, died at Shelbyville, Ky., Feb. 22. A graduate of Rensselaer Polytechnic Institute, he formerly was a civil engineer for the Louisville & Nashville R. R. and president of the Louisville Bridge and Iron Co.

John E. S. Thorpe, 65, of Franklin, N. C., a civil engineer long active in the power and light field, and latterly president of Nantahala Power and Light Co., died Feb. 24. He was a graduate of Johns Hopkins University, Baltimore.

Charles C. Agar, of Elsmere, N. Y., a few months ago appointed chief of the water pollution control section of the N. Y. State Department of Health, died in Albany, Feb. 15. A 1920 graduate of Worcester Polytechnic Institute, in 1925 he entered sanitary engineering as a research chemist at the Worcester, Mass., city sewage treatment works. In 1937 he was elected president of the N. Y. State Sewage Works Association and won the Kenneth Allen memorial award that year. He was a veteran of both world wars and in the last one was on General Patton's headquarters staff and was sanitary engineer of the Third Army.

Floyd B. Minium, 63, Minnesota highway department district engineer since 1933, died at New Ulm, Minn., March 2. Formerly he was city engineer of that place.

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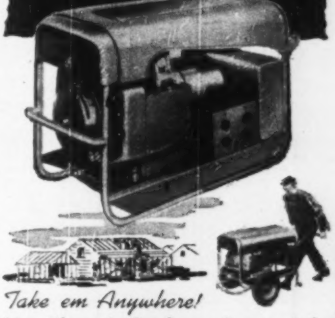

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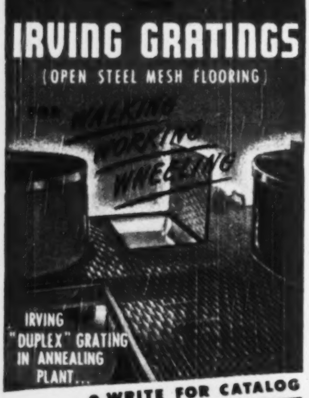
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UNIT PRICES BID BY CONTRACTORS

Buried asphaltic membrane canal lining, Riverton, Wyo.

Six of the eight bids on the Riverton project were below the engineer's estimate, Jan. 19, when Sharrock & Pursel of Casper, Wyo., placed low with their $48,850. The work is 30 mi. northwest of Riverton and 4 mi. north of Pavillion, Wyo., extending from sta. 992 to sta. 1490. Work can be done only before May 1 or after September 30.

Asphalt material must be applied by hot spray through high pressure, flexible metallic hose.

Minimum wage rates set for this job include: laborers $1.25 an hour, truck drivers $1.35-$1.50, equipment operators from $1.40 for farm type tractor operators, $1.50 for air tools, to $2.15 for cranes and shovels and $2.50 for the big walking type dragline.

1 Sharrock & Pursel (Contract)	$48,850
2 Woodward Constr. Co.	48,950
8 Taggart Constr. Co.	73,563

Items	Quantity	Unit prices 1	2
Rolling . . . . sy	138,000	$0.03	$0.03
Sprinkle, sub-gr-M. gal	25	10.00	20.00
Furn. asphalt *. . . ton	870	40.00	43.00
Apply asphalt. . . sy	138,000	0.07	0.05

*catalytically blown asphalt cement

Street improvements at Daytona Beach, Fla.

Seven contractors, only 7½% apart, produced a low bid of $2,340,849 for Daytona Beach, Fla., Dec. 22, 1949, in street improvements. Work to be done includes resurfacing existing streets, storm water drainage, sidewalk, curb and gutter, and new streets. James M. Titus is city manager, William Leseman, city engineer and Gannett Fleming Corddry and Carpenter, Inc, of Harrisburg, Pa., are consulting engineers.

The contractor furnishes all labor, material and equipment. The job is two miles from a railroad. Wage rates to be paid are $1.25 an hour for skilled labor, $1.00 for semi-skilled and $0.75 for common labor.

1 Brinson, Cone and Manley (C)	$2,340,849
2 Frank Construction Co.	2,402,978
7 M. J. Carroll Construction Co.	2,519,766

Items	Quantity	Unit prices 1	2
Asph level crs,-			
Type A . . . . . ton	4,159	$14.00	$11.44
Type B . . . . . ton	1,266	12.00	10.36
1" sh asph surf crs *. . . . . sy	895,566	.83	.85
1½" sh asph bndr crs. . . . . sy	293,606	.86	.81
6" pl cmt concr base crs * . . . sy	35,161	3.85	4.95
Cmt (for cmt stblz base crs) bbl	30,386	4.90	4.80
6" soil cmt stblz base crs *- sy	271,876	.59	.50
5" sand asph base crs *- unif thick sy	271,876	1.90	2.51
Scarif & Reshaped base crs . . . . sy	29,914	.59	.57
Subgrade . . . . . sy	35,161	.15	.79
Shoulders. . . . . lf	58,284	.30	.65
Asph cut-back. . gal	91,605	.18	.23
Tar. . . . . gal	59,376	.25	.29
Cmt concr header curb . . lf	102,732	.85	.77
Concr curb -			
straight. . . . lf	1,000	1.20	1.09
radial . . . . . lf	5,563	1.50	1.36
Concr curb & gutr lf	5,689	1.50	2.38
Concr valley gutr lf	17,538	.80	2.04
Concr sdwlk,			
4" deep. . . . sf	24,673	.35	.38
6" " . . . . sf	300	.50	.51
Hauled-in-Matl . cy	1,500	2.50	2.04
Type A end walls,			
15" pipe . . . ea	1	100.00	106.11
18" " . . . ea	1	120.00	120.49
30" " . . . ea	2	175.00	177.19
36" " . . . ea	1	212.00	212.62
Curtain walls,			
15" pipe . . . ea	29	50.00	35.44
18" " . . . ea	7	60.00	49.61
24" " . . . ea	7	70.00	70.87
30" " . . . ea	4	90.00	85.05
Type A inlet. . . ea	195	250.00	147.75
Type B inlet. . . ea	33	250.00	184.27
Rebuilt inlet. . . ea	38	85.00	85.05
Conn to exist CMP storm sewer . . ea	6	141.00	141.75
Standard manholes (mh) . . . ea	49	275.00	127.57
Shallow mhs. . . ea	23	150.00	113.40
Adjust, mh & inlets . . . . . ea	900	28.00	28.35
Adjust, vlv box, metr box, etc. ea	500	14.00	14.17
Reinf cmt concr cap, exist inlets . . ea	36	60.00	63.79
Cmt concr without forms . . . . . . cy	6,875	20.00	27.00
Reloc air vlv, san swr line. . . . . ea	1	100.00	70.87
15" RCC pipe,			
0'-4' deep. . lf	4,856	3.35	3.40
4'-6' " . . lf	456	3.80	3.71
15" asph ctd CMP**,			
0'-4' deep . . lf	4,856	3.35	3.40
4'-6' " . . lf	456	3.80	3.71
18" RCC pipe,			
0'-4' deep. . lf	1,200	4.20	4.18
4'-6' " . . lf	8,414	5.63	4.50
6'-8' " . . lf	5,871	6.30	5.48
8'-10' " . . lf	2,193	8.10	8.18
10'-12' . . lf	348	9.45	9.49
21" asph ctd CMP**,			
0'-4' deep . . lf	1,200	4.20	4.18
4'-6' " . . lf	8,414	5.63	4.50
6'-8' " . . lf	5,871	6.30	5.48
8'-10' " . . lf	2,193	8.10	8.18
10'-12' . . lf	348	9.45	9.49
21" RCC pipe -			
4'-6' deep. . lf	832	6.30	6.47
6'-8' " . . lf	594	8.25	8.34
8'-10' " . . lf	238	9.50	9.53
10'-12' . . lf	320	10.50	10.84
24" Asph ctd CMP**,			
4'-6' deep. . lf	832	6.30	6.47
6'-8' " . . lf	594	8.25	8.34
8'-10' " . . lf	238	9.50	9.53
10'-12' . . lf	320	10.50	10.84
24" RCC pipe,			
0'-4' deep. . lf	100	6.50	6.51
6'-8' " . . lf	792	7.70	7.91
10'-12' . . lf	298	10.50	10.75
27" Asph ctd CMP**,			
0'-4' deep. . lf	100	6.50	6.51
6'-8' " . . lf	792	7.70	7.91
10'-12' . . lf	298	10.50	10.75
27" RCC pipe,			
6'-8' deep. . lf	642	11.00	11.23
8'-10' " . . lf	189	12.20	12.20
10'-12' . . lf	163	15.00	15.11
30" Asph ctd CMP**,			
6'-8' deep. . lf	642	11.00	11.23
8'-10' " . . lf	189	12.20	12.20
10'-12' . . lf	163	15.00	15.11
30" RCC pipe,			
0'-4' deep. . lf	232	9.00	9.07
4'-6' " . . lf	113	10.00	10.68
6'-8' " . . lf	37	12.10	12.11
8'-10' " . . lf	116	13.85	13.89
10'-12' . . lf	1,071	16.00	16.04
12'-14' . . lf	661	18.00	18.24
14'-16' . . lf	296	20.00	20.80
36" Asph ctd CMP**,			
0'-4' deep. . lf	232	9.00	9.07
4'-6' " . . lf	113	10.00	10.68
6'-8' " . . lf	37	12.10	12.11
8'-10' " . . lf	916	13.85	13.89
10'-12' . . lf	1,071	16.00	16.04
12'-14' . . lf	661	18.00	18.24
14'-16' . . lf	296	20.00	20.80
36" RCC pipe,			
0'-4' deep. . lf	210	12.50	12.57
4'-6' " . . lf	70	13.80	13.80
6'-8' " . . lf	26	15.20	15.23
8'-10' " . . lf	117	17.00	17.01
10'-12' . . lf	1,142	19.00	19.16
12'-14' . . lf	175	21.25	21.36
42" Asph ctd CMP**,			
0'-4' deep. . lf	210	12.50	12.57
4'-6' " . . lf	70	13.80	13.80
6'-8' " . . lf	26	15.20	15.23
8'-10' " . . lf	117	17.00	17.01
10'-12' . . lf	1,142	19.00	19.16
12'-14' . . lf	175	21.25	21.36
Drway pavt repl -			
Bituminous sy	100	3.00	2.73
Concrete . . . sy	100	5.00	4.82
6" marl base comp. . . . . sy	100	2.00	2.04
Pouring cracks . ls		—	—
Sheeting lip . Mfbm	10	125.00	134.50
6" San sewer lat. lf	48,000	1.50	1.42
Water serv pipe,			
3/4" . . . . lf	5,000	.60	.85
1" . . . . lf	5,000	.75	.93
1¼" . . . . lf	5,000	1.00	1.31
2" . . . . lf	10,000	1.50	1.44

*uniform thickness **alternate - fully asphalte coated corrug. metal. RCC - Reinf cmt concr

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Pa., Williamsport—B.A. 3/22—At offices Williamsport Municipal Water Auth., 253 4 St., earth dam and impounding reservoir, appurtenances. Plans deposit $25. Gannett, Fleming, Corddry & Carpenter, Inc., 600 N. Second St., Harrisburg, engr.

Pa., Phila.—B.A. 3/23—Dpt. P. Wks., City Hall Annex, water mains, Woodbrook lane and various locations; Willow Grove Ave., Ardleigh St., and Southampton Ave. etc., Approx. $50,000 each. Elbert J. Taylor, c/o owner, Water Bureau Chief. CD 11/24/44.

Tex., Lockhart—B.A. 3/23—City, water line extens., sys. imprvs. $110,000. Plans deposit $25. Julian Montgomery, 602 West Ave., Austin, engr.

Minn., Gonvich—B.A. 3/24—Village, G. D. Allen, clk., WW. sys. incl. approx. 10,450 lin. ft. c i mains, 50,000 gal wood or steel tank and tower, deep well turbine, pump, pump house, etc. $66,000. H. S. Hall, Alexandria, engr. CD 2/21.

Tex., Tulia—B.A. 3/24—City, R. L. Cantrell, mayor, WW sys. extens., imprvs. $75,000.

N. C., Graham—B.A. 3/27—Town, Robert Crow, clk., City Hall, WW imprvs., Sect. A, 4 mi. 4- to 12-in. c. i. pipe lines; Sect. B, 1 m. g. filter plant, masonry dam, raw water pump station; Sect. C, filter plant equip.; Sect. D, 5 pumping units, complete; Sect. E, power and light fixtures and equip. and wiring; Sect. F, plumbing and fixtures. Plans deposit $25. Linberg Engineers, Burlington, engrs. CD 10/16/46.

Tex., Weslaco—B.A. 3/27—City, WW sys. Imprvs. $30,000. Sigler, Clark & Winston, Weslaco, engrs.

Pa., Phila.—B. A. 3/23—Dpt. P. Wks., City Hall Annex, watermains, Adams Ave.; Vine and 10 Sts., Approx. $50,000 each; Vine St. at 15 St. and in Vine to Broad Sts., Approx. $75,000. Elbert J. Taylor, c/o owner, Water Bureau Chief. CD 11/24/44.

Tex., Bellaire—Bids Asked—Associates Home Builders, c/o M. H. Godbold, Bellaire, c.i. water lines, facilities Lee Manor Addn. $35,000. Howe & Wise, 4119 San Jacinto St., Houston, engrs.

Tex., Houston—Bids Asked—Meadowbrook Building Co., 7801 Howard Dr., c. i. water lines in new sub-division. $35,000..

Ont., Niagara Falls—Bids Asked—A. O. Williams, work mgr., c/o North American Cyanamid Ltd., 1 Fourth Ave., 7½ mi. 12 in. pipe line from plant here to Welland plant at Garner Rd., Stamford Twp. Approx. $125,000.

LOW BIDDERS

Calif., Long Beach—City Water Dpt., 215 W. Broadway, water main from Victoria St. and Wilmington Ave. to Johnson Reservoir, from A.B.C. Constr. Co., 14346 Lakewood Blvd., Paramount, **$197,917**. CD 2/15.

Calif., San Francisco—Public Utilities Comn., City Hall, Feb. 28, Rock River lime treatment plant, Foothill Div. of Hetch Hetchy Aqueduct, Spec. 221 from Charles I. Cunningham, Box 475, Oakdale, Schedule 1, **$65,500**; Schedule 2, **$65,697**. CD 2/14.

Calif., San Rafael—Marin Municipal Water Dist., 874 4 St., Feb. 28, installing 7,300 lin. ft. 36 in. bell and spigot welded joint water pipe line from Mountain Tunnel to Fairfax Gate House from B. Miles Thomas, 67 Buena Vista Terrace, San Francisco. **$33,096.** CD 2/14.

La., New Orleans—Sewerage & Water Bd. of New Orleans, 526 Carondelet St., Mar. 1, Contr. 302W, reinforced cement mortar exterior coating, 8,500 lin. ft. steel pipe of 50.8 in. outside diam., from John D. Bolton & Co., Inc., 910 Custer Ave., Evanston, Ill., **$54,401.** CD 1/25.

Mich., Detroit—Dpt. P. Wks., City Hall, Feb. 28, Contr. PW 679B, 1 story, 50x204 ft., rein.-con., Fairview Pumping Station addn., from Douglas Cloud Co., 1017 Penobscot Bldg. **$524,885.** CD 2/1.

Mo., Caruthersville—City, Viola Kramer, clk., City Hall, Jan. 17, WW. imprvs., Set 1, general constr. works, incl. filter bldg., aerator, waster water reservoir, pumping equipment, connecting piping, appurtenances; and Sect. 2, filter and chemical equipment, incl. filter, chemical piping, appurtenances, from Don Pray, Monett, **$114,800**. CD 12/16.

Tex., Dallas—City, City Hall, Main and Harwood Sts., Feb. 28, 30 in. watermain in Chalmers St., from Sunset Pump Station to Brandon, Cont. 301, from E. H. Reeder Constr. Co., 2128 Hawes St., **$83,785.**

Tex., Robstown—Nueces Water Imprv. Dist. 3, Robstown, Feb. 23, WW imprvs., approx. 12,000 lin. ft. 6-to 16-in. lines from J. B. Garrett Plumbing Co., 1343 S. Staples St., Corpus Christi, materials and constr. **$57,609**, construction only **$16,727**; pipe materials, from U. S. Pipe & Fdry. Co., N. Esperson Bldg., Houston, **$36,421.** CD 1/31.

Va., Arlington—Arlington Co. Bd., A. T. Lundberg, Co. mgr., Courthouse, Feb. 28, 1½ m.g. steel ground reservoir, concrete fdns., from Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa., **$44,900.** CD 2/7.

Wis., Lake—Town of Lake, 4001 S. 6 St., Milwaukee Zone 7, Feb. 28, laying water mains in various streets, from R-W Constr. Co., 4831 W. State St., Milwaukee, Zone 8. **$361,014.** CD 2/23.

CONTRACTS AWARDED

Calif., El Segundo—City Council, 203 Richmond Ave., rein.-con. reservoir and pump house, to Hongola & Elliott, Box 157, Norwalk, **$141,914.** Bids 1/18. CD 12/7, under LB.

Colo., Denver—Bd. Water Comrs., City and County Bldg., Denver, replacing 30 in. water conduit approx. 5171 lin. ft. of I. D. reinforcing concrete water pipe, known as Conduit 5 from 5 Ave. and Colorado Blvd. to 7 Ave., Parkway and Clayton St., to Northwestern Engineering, E. 60 St. and Colorado Blvd., **$37,177**, Est. Approx. $28,000. Awarded 2/24. CD 1/9/48.

Ga., College Park—City, distr. sys. addn., to Greene & O'Donnell Constr. Co., 2117 Piedmont Rd. N. E., Atlanta, **$32,259.** Bids 3/1. CD 2/9.

Ill., Pontiac—State of Illinois, Springfield, watermains, sewers, plumbing for power house on Pontiac Branch of Illinois State Penitentiary, to Petersburg Plumbing & Heating, Petersburg. **$123,986.** Awarded 2/24.

Mass., Boston—Commonwealth of Mass., 20 Somerset St., Feb. 16, Contr. 168, furnishing, laying 14,900 lin. ft. 30 in. c. i. and steel water pipes, Saugus, from C. Di Martino & Sons, 86 Clare Ave., Hyde Park, **$538,000**, Est. $400,000. CD 2/10.

Miss., Lucedale—Town, Town Hall, water distr. sys., exten., to Smith-Sweger Constr. Co., Clearwater, Fla., **$50,692.** Bids 2/27. CD 2/10.

Mont., Billings—Yellowstone Co. Rural Special Imprvt. Dist. 122, Billings, installing 12,716 ft. 6- to 10-in. c.i. water mains, fittings in area between Second and Fourth Aves. north and between N. Ninth St. and U. S. Hy. 10, in area contiguous to Billings on east, to Christensen Plumbing & Heating Co., 3615 Montana Ave. **$52,081.** Bids 2/27, awarded 2/28. CD 2/16.

N. D., Fargo—City, City Hall, furnish slurry type basin equip. for water filtration plant, to Infilco, Inc., 325 W. 25 Pl., Chicago, Ill., **$81,302**. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. Bids 1/24. CD 12/14/45.

Ore., Portland—Stanley Water Dist., Stanley Ave. and Johnson Creek Blvd., replacing and exten. water mains to Eugene Ruedy Co., 2919 N. W. Nicolai St., **$46,668**. Bids 3/1. CD 2/16.

Tex., Abilene—City, addnl. water distr. lines, force account. Approx. **$34,000**. B. R. Blankenship, engr.

Tex., Houston—City, City Hall, 900 Brazos St., c.i. water mains, Irvington Blvd., Approx. **$28,000**; 1 in. c. i. mains, 1 and 2 in. service lines, Lockwood-Wallisville Rd. area, **$38,460**; c. i. water lines in Ayrshire Addn., Approx. **$30,000**, own forces. Grand total $96,460. L. Fugate, city engr.

Tex., Waco—City, connecting water lines (laying lines), own forces. **$35,000**. CD 7/23/48.

Ont., Leamington—Council, Mayor Sherman, Leamington, elevated steel water tank, mains, fittings, to Horton Steel Wks., Fort Erie, Approx. $75,000. CD 7/9/45.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68-000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). **For full** calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

SEWERS, WASTE DISPOSAL

BIDS ASKED

Pa., Grove City—B.A.—3/20—Boro, Boro Hall, sewage disposal plant addn., increasing disposal facilities, $100,000. Chester Engineers, 210 E. Parkway, Pittsburgh, engrs. CD 1/26.

N. C., Hickory—B.A. 3/21—City, H. L. Burdett, city mgr., Hickory, sewer lines and plant. Approx. $250,000. Wm C. Olsen, 5 Exchange Pl., Raleigh, engr.

Tex., Lockhart—B.A. 3/23—City, sanitary sewer lines exten. and sys. imprvs. $90,000. Plans deposit $25. Julian Montgomery, 602 West Ave., Austin, engr.

Wis., Lake—B.A. 3/23—Town of Lake, 4001 S. St. Milwaukee, Zone 7, 3 story, 112x141 ft., steel, brick water filtration plant, concrete fdns. and floors; facilities connecting intake and low lift pumping plant with filtration plant, incl. suction well, low lift pump house, low lift supply lines, land sect. of water lines, road grading, paving, curb, gutter; approx. 5,250 ft. 36 or 30 in. c.i. intake pipe into Lake Michigan and 425 ft. 20 in. steel submerged waste line. Plans deposit $30 each. Darby, Bogner & Assoc., 759 N. Milwaukee St., Milwaukee, Zone 2, archts. CD 11/3.

Tex., Crandall—B.A. 3/27—City, sanitary sewerage sys. and treatment plant. $75,000. Plans deposit $15. Joe J. Rady, 811 Insurance Bldg., Fort Worth, engr.

Tex., Weslaco—B.A. 3/27—City, sanitary sewerage sys. imprvs. $50,000. Sigler, Clark & Winston, Weslaco, engrs. CD 1/3.

La., Olla—B.A. 3/28—Town, Town Hall, 5½ mi., sewer lines, lift station and sewage treatment plant, Plans deposit $25. J. M. Fourmy, Hammond, engr. CD 8/23/45.

Conn., Waterbury—B.A. 3/29—Bd. P. Wks., City Hall, incinerator, refuse storage pit, 2 incinerator units, bridge crane, mechanical ash handling equip., scale and scale house, electrical work, heating and misc. appurtenant work. Plans deposit $25. Malcom Pirnie Engineers, 24 W. 43 St., New York, N. Y., engrs. Henry C. Whitlock, city engr. CD 11/21/49.

Tex., Bellaire—Bids Asked—Associates Home Builders, c/o M. H. Godbold, Bellaire, sanitary sewers, $60,000; storm sewers, $50,000, in Lee Manor sub-division. Howe & Wise, 4110 San Jacinto St., Houston, engrs.

Tex., Houston—Bids Asked—Meadowbrook Building Co., 7801 Howard Dr., sanitary sewers in new sub-division. $60,000.

LOW BIDDERS

Calif., Cloverdale—City, City Hall, Feb. 28, sewage treatment plant and water storage reservoir, from Baldwin Straub Corp., 26 Francisco Blvd., San Rafael, **$51,330.**

Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan St., Mar. 2, Contr. 10, Upper Des Plaines Intercepting Sewer, 20,700 ft. in River Grove, Melrose Park, Stone Park, North Lake, Leyden and Provise, from Kenny Constr. Co., 111 W. Washington St., **$748,646**. CD 2/20.

▲ **La., New Orleans**—Sewerage & Water Bd. of New Orleans, 526 Carondelet St., Mar. 1, Contr. 241-D, 8,400 lin. ft. 20- to 28-in. rein.-con. lined and covered canal in Orleans Ave. and N. Jefferson Davis Parkway to Pumping Station 7 and tributary lines in various streets, from Boh Bros. Constr. Co., 2400 Cypress St. **$1,967,579.** CD 1/25, under Water Supply.

Tex., Idalou—City, Feb. 28, sanitary sewers, from Enix Constr. Co., Amarillo, **$53,560**. Est. $70,000. CD 2/7.

Tex., San Antonio—City, City Hall, Military Plaza, Mar. 3, Sect. III West Side Sanitary Sewer Main, incl. 26,300 lin. ft. 12-to 33-in. concrete pipe, manholes, structures, appurtenances, from Reising Constr. Co., Edinburg, **$172,858**. Est. $275,000. CD 2/20.

CONTRACTS AWARDED

N. J., Phillipsburg—Town, Town Hall, sewage disposal plant and main pump. station, to R. N. Luff Constr. Co., York and Welsh Rds., Willow Grove, Pa. **$542,200**. CD 2/24, under LB.

N. C., Charlotte—City, H. A. Yancey, mgr., City Hall, sanitary sewers, to Suber & Co., Whitmire, S. C., **$51,308.** Bids 2/24. CD 5/1/46.

Tex., Corpus Christi—City, City Hall, Feb. 28, storm sewers, Sobey St. to Victor Dry., from Heldenfels Bros., 521 McBride Lane, **$51,165**. R. L. Otto, city engr. CD 12/28.

Tex., Waco—City, sanitary sewer lines, own forces. Approx. **$65,000**. CD 7/1/48.

Wis., Granville—Town, 7717 W. Good Hope Rd., Milwaukee, Zone 16, laying vitr. clay sanitary sewers in various streets, to Otto P. Seefeld Co., 5101 W. State St., Milwaukee, Zone 8, **$61,961**. Bids 2/24. CD 2/14.

Above are two views of small Sauerman Tautline Cableways in action. Upper view shows a travelling unit of 2-ton load capacity, pouring concrete for a covered reservoir. Lower view is a 2-ton machine of stationary type that spans a South American river 400 ft. wide and serves as a combined bridge and ferry. These simple, light Sauerman machines are as big money savers in their own field as the heavy duty Sauerman Tautlines are on large construction jobs.

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Ore., Milwaukie—City, City Hall, intercepting sewers, sewage pump. station and sewage treatment plant, to P. S. Lord, 4507 S.E. Milwaukie St., Portland. **$181,633.** Est. $200,000. Bids 2/27. CD 2/8.

BRIDGES

Pennsylvania—B.A. 3/20—**Pennsylvania Turnpike Comn.**, 11 N. 4 St., Harrisburg,

Beaver Co.—construct superstructure of bridge carrying western exten. of Pennsylvania Turnpike over Beaver River, Sect. 29CD, approx. ½ mi. east of Homewood, from approx. 284 ft. west of centerline of west track of P. & L. E. R. R. Big Beaver Twp., east 1,545 ft. to approx. 478 ft. east of the centerline of the east track of P. R. R., N. Sewickley Twp. approx. 0.293 mi. Plans deposit $10. George Richardson, Park Bldg., Pittsburgh, engr.

Pennsylvania—B.A. 3/29—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,

Allegheny Co.—construct superstructure of bridge carrying western exten. of Pennsylvania Turnpike over Allegheny River, Sect. 31Ab, from point on right descending bank of river easterly to Turnpike centerline on left bank, 0.4356 mi. Plans deposit $10. Modjeski & Masters, State Street Bldg., Harrisburg, engrs.

N. B., St. John—B. A. 4/4—H. D. Hopkins, City common clk., 1200 ft. rein.-con. Mill St. Viaduct, with two 22 ft. highways extended by 10 ft. at either side for bus parking, ramps at both ends 48 ft. 6 in. spans, full length balustrade, lighting, Approx. $725,000. Plans deposit $25. P. L. Prattey, 1117 St. Catherine St. W., Montreal, Que., engr. CD 12/23.

Pa., Phila.—B. A. 4/5—Dpt. P. Wks., City Hall Annex, bridge, Wingohocking St. $120,000. A. Zane Hoffman, c/o owner, ch. engr.. CD 2/3/47.

LOW BIDDERS

Colo., Denver—City and Denver Co., County and City Bldg., Feb. 27, Clarkson Street Bridge over Cherry Creek and approaches, from Hutcheson Constr., Inc., 4101 E. Evans St., **$53,008.**

Kansas—State Hy. Comn., Court House, Olathe, Feb. 28, 28 x 119 ft. overpass and 24 x 83 ft. bridge, U. S. 50, at 75 St., near east end of Hy., Johnson Co., from General Eng. Co., 1330 Western St., Topeka, **$58,556.** CD 2/13, under Streets and Roads.

Kentucky—State Hy. Dpt., Frankfort, Feb. 24, bridge and c. conc. approaches over Pup Creek 0.017 mi., Owensboro-Hawesville Rd., F 105 (7) SP 30-17, Daviess Co., from S. J. Boone, Owensboro, **$87,333;** steel superstructure and concrete flooring bridge over Cumberland River, 0.277 mi. F 530 (5) SP 72-171 Lyon Co., from John F. Beasley Constr. Co., 20 N. Wacker St., Chicago, Ill., **$429,440.** CD 2/8.

Maryland—State Rds. Comn., Baltimore, Feb. 28, 4 span, 38-67-67-38 ft. steel I-beam bridge with rein.-con. piers and abutments, stone faced, 0.07 mi. macad. surf. approaches, to carry Co. Rd. over Washington National Pike at Station 749 plus 85, intersecting U. S. Rte. 240, about 2½ mi. east of Monacacy River, Contr. 425-8-615, and steel beam and concrete underpass 55 ft. span by 14 ft. rise, bridge has dual superstructures, each 37 ft. wide to carry Washington National Pike over Co. Rd. at Station 830+, Araby Church Rd., completion of grading, paving sections embankments of Washington National Pike contiguous to underpass abutments, Contr. F-425-9-615, Frederick Co., from Zerkel Constr., Inc., 1011 20 St. N. W., Wash., D. C., **$94,235** and **$142,757** respectively. CD 2/16.

Massachusetts—Commonwealth of Mass., Dpt. P. Wks., Boston, Feb. 28, 2 steel stringer bridges, Sullivan Square over Boston and Main and Boston and Albany R. R., U-341(1), Contr. B, Boston and Somerville, from Wescott Constr. Co., 52 N. Washington St., North Attleboro, **$646,167.** CD 2/10.

New Jersey and Pennsylvania—Delaware River Joint Toll Bridge Comn., Broad St. Bank Bldg., Trenton, N. J., Mar. 2, flooring on bridge over Delaware River, Wilburtha, Mercer Co., N. J. and Yardley, Bucks Co., Pa., from Conn Welding & Machine Co., New Castle, Del., **$53,726** (daytime) **$55,768** (night). CD 2/1.

New Jersey—New Jersey Turnpike Auth., Trenton, 6 pairs concrete piers, 2 pairs of abutments together with necessary excavation cofferdams, fender system and other incidental work, Carteret—Linden, Middlesex and Union Counties, to Linde-Griffith Constr. Co., 152 Passaic St., Newark, **$603,879.** Bids 2/21, awarded 2/24. CD 2/24, under LB.

New Jersey—State Hy. Dpt., Trenton, Mar. 2 constr. 0.368 mi. Route 4, Sect. 5B, westbound overpass at Route S4B and connection to West Saddle River Rd., Fairlawn Boro, Fed. Proj. U-189 (3), Bergen Co., from Samuel Braen's & Sons, 662 Golf Rd., Hawthorne, **$298,582.** CD 2/9, under Streets and Roads.

▲ **New York**—Bureau Contracts & Accounts, Albany, Mar. 1, elimination grade crossing of New York Central R. R. and W. Main St., city of Watertown, 8 in. c. conc. paving, two 32 ft. span I-beam, 0.23 mi. Contr. No. P. S. C. 6591, Jefferson Co., from Collins Bros., 12 Talimadge Pl., Mechanicville, **$394,253,** est. $490,000; elimination grade crossing of New York Central R. R. with city of Syracuse, James St.; Eastwood Village, S. H. 896, James St., S. H. 9, Thompson, S. H. 429 and Thompson Rd., D. A. S. S. 43-4, Proj. No. UG 1094 (1), c. conc. paving, b. conc., 64 ft. Alpha I-beam, 0.95 mi. Contr. No. FG C-50-3, FG RC50-2, FG RC SS50-3, Onondaga Co., from D. W.

Winkelman Co., Inc., Heffernan Bldg., Syracuse, **$643,458**, est. $860,000. CD 1/27.

†**N. Y., Montour Falls**—U. S. Eng., Engineer Park, Niagara and Bridge Sts., Buffalo, Zone 7, Mar. 1, wid'n. Pennsylvania R. R. bridge over Shequaga Creek, Inv. CIVENG-30-023-50-26 from Victor C. Arzani Contg. Co., 2507 James St., Syracuse, **$73,015**. CD 2/20.

Pennsylvania—State Hy. Dpt., Harrisburg, Mar. 3 through truss bridge, crushed aggregate base with bit. surf. 18 ft. wide, bit. surf. for paving railroad crossings, 2,205 ft. Traffic bridge over Susquehanna River to connect Retreat State Hospital with U. S. Route 11, Hunlock and Newport Twps., Luzerne Co., from James E. Minnich, Inc., Womelsdorf, **$554,787**. CD 2/14.

Tex., Dallas—City, City Hall, Main and Harwood Sts., Feb. 21, underpass or grade separation, concrete type, Harwood St. under Santa Fe and T. & N. O. Ry. tracks, from Texas Bitulithic Co., 111 Commerce St., **$490,137**. Est. $400,000. CD 2/7

CONTRACTS AWARDED

Utah—State Road Comn., State Capitol, Salt Lake City, wid'n. 74 ft. span concrete arch bridge over Logan River in Logan City, FAP Proj. No. F-127 (14), Cache Co., to Legrand Johnston, Logan, **$66,956**, est. $67,652; construct 2 rein.-con. bridges, one 85 ft. span, other 68 ft. span, over washes on U. S. 50 and 6, between Thompson and Cisco, Grand Co., to W. W. Clyde & Co., Springville, **$66,862**, est. $79,217. Bids 2/14. CD 2/3.

STREETS AND ROADS

BIDS ASKED

N. C., Mooresville—B.A. 3/25—Town, J. R. Holshouser, mayor, Town Hall, street imprvs., 66,000 cu. yd. excav. 96,000 sq. yd. paving, 4 in. crusher-run stone base and 1½ in. concrete surface, 17,000 ft. storm sewer, etc., 10,000 ft. 4 in. c.i. soil pipe sewer connections, 1,800 ft. sanitary sewers, etc. Plans deposit $20. Piatt & Davis, Durham, engrs. CD 5/24/46.

Calif., Los Angeles—B.A. 3/28—Bd. Supervs. Los Angeles Co., 501 Hall of Records, imprv. approx. 5,000 ft. Freeman Blvd. from Manchester Ave. to Knowlton St., C.C. 0-6711, Inglewood. $50,000. Plans deposit $5. C. E. Arnold, co. engr.

Tex., Jourdanton—B.A. 4/4—Atascosa Co., Jourdanton, 19 mi. grading, drainage, flexible base, asph. surf. tr. $140,000. Willard Smith, co. engr. CD 2/13.

Ind., Terre Haute—B.A. 4/7—At office Cont. Officer, Terre Haute Ordnance Depot, Terre Haute, (1) remove and dispose 6,000 sq. yd. plain concrete paving (2) replace 2,100 lin. ft. 5 in. vitr. clay drains with 5 in. extra-heavy c.i. soil pipe (3) pave 6,000 sq. yd. warehouse loading platforms with 6 in. rein.-con. slab.

Tex., Bellaire—Bids Asked—Associated Home Builders, c/o M. H. Godbold, Bellaire, street constr., asph. paving, Lee Manor sub-division. $60,000. Howe & Wise, 4119 San Jacinto St., Houston, engrs.

LOW BIDDERS

California—State Div. Hys., Sacramento, Mar. 1, plant mix surf. and apply seal coat 4.9 mi. between Gonzales and Chualar, Monterey Co., from Rice Bros., Box 1498, Marysville, **$84,865*****hy. imprvt. 5.8 mi. at various locations between 3.3 mi. south of San Jose and Madrone, Santa Clara Co., from Leo F. Piazza, 175 S. Montgomery St., San Jose, **$100,406*****grading, treat with penetration oil and seal coat 12.6 mi. Keystone-Larange Rd. between State Hy. Rt. 13, and Stanislaus Co. line, Tuolumne Co., from Chittenden & Chittenden, Box 246, Auburn, **$167,392**. CD 2/6.

Calif., San Diego—City Council, Feb. 21, imprv. Wabash and Federal Blvds., from Daley Corp., Box 67, North Park Sta., San Diego, **$710,444**. CD 1/27.

Kansas—State Hy. Comn., Olathe, Feb. 28, grading 14.9 mi. U. S. Hy. 50, Johnson Co., from George Bennett Constr. Co., 1520 Central St., Kansas City, Kan., **$651,872**. CD 2/13.

▲ **Kentucky**—State Hy. Dpt., Frankfort, Feb. 24, from Middle West Roads Co., Noblesville, Ind., Class I, bit. surf. 7.985 mi. Lexington-Frankfort Rd., FI 326(22), SP (37-65)(120-35), Franklin and Woodford Counties, **$326,393**; bit. surf. Class F 19.01 mi. SP Group 1 (1950), Marshall Co., **$105,065**; bit. surf., Class I, rock asph. surf. 26.972 mi. SP Group 12 (1950), Logan and Todd Counties, **$278,055*****from Sam Nally Co., Bardstown, reconstr. and traffic bound limestone surf. 5.212 mi. Lola-Hampton Rd., RS 70-310, Livingston Co., **$59,062**; traffic bound limestone 12.975 mi. McAndrews-Ransom Rd., RS (98-823)(98-683), Pike Co., combined bid, **$324,741*****from Nally & Gibson, Springfield, traffic bound limestone, and reconstr. 4.394 mi. Royrader-High Knob Rd., RS 55-149, Jackson Co., **$67,635**; reconstr. and traffic bound limestone 4.083 mi. Artemus-Himyar-U. S. 25E Rd., RS 61-150, Knox Co., **$82,339*****from Kentucky Road Oiling Co., Frankfort, Class F (limestone aggregate), bit. surf. 15.053 mi. S 336(4), SP (64-73)(32-29), Lawrence and Elliott Counties, **$286,619*****from Hicks Freeman Co., Inc., Prospect, traffic bound limestone 3.216 mi. Mt. Vernon-Somerset Rd., S 102(3), SP 102-237, Rockcastle Co., **$71,185**

from Wellner Contr. Co., Winchester, traffic bound river grav. 0.96 mi. Paducah-Oaks-Symsonia Rd., S 75(2) SP 73-412, McCracken Co., **$115,840*****from Sager Constr. Co., 5507 Pershing St., St. Louis, Mo., bank or creek grav. 0.96 mi. Paducah-Oaks-Symsonia Rd., S 75(2) SP 73-412, McCracken Co., **$114,642***** from R. E. Gaddie, Inc., Bowling Green, road wid'n. and bit. surf., Class I, 2.741 mi., Franklin-Bowling Green Rd., FI 370(10) SP 107-5, Simpson Co.,

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$164,879***from H. K. Williams, 4141 Park Blvd., Louisville, bit. surf., Class I 5.361 mi., SP Group 3 (1950), Jefferson Co., **$81,464*****from Gay-Coleman Constr. Co., 113 Cheapside St., and Carey Constr. Co., 613 Citizens Bank Bldg., Lexington, bit. surf. Class F binder and rock asph. seal, 8.313 mi. SP Group 16 (1950), Mercer Co., **$53,174*****from Allen-Codell Co., Inc., Winchester, bit. surf., Class F 16.415 mi. SP Group 17 (1950), Jackson and Clay Counties, **$112,213*****from Mott & Blackburn Co., Mexico, traffic bound limestone and reconstr. surf. 11.336 mi. Creswell-Enon-Fredonia Rd., RS 17-402, Caldwell Co., **$73,837*****from Robinson & Lashbrook, Owensboro, traffic bound limestone and local bank or creek grav. 9.159 mi. Weberstown-Patesville-Dukes-Breckinridge Co. Line Rd., RS 46-157, Hancock Co., **$71,000** and **$64,028** respectively

from Louis F. Chapman, Clay, traffic bound river grav. 9.159 mi. Weberstown-Patesville-Dukes-Breckinridge Co. Line Rd., RS 46-157, Hancock Co., **$81,126*****from Greenville Quarries, Inc., Greenville, traffic bound limestone surf. and reconstr. 7.234 mi. Kelat-Berry-Colemansville Rd., RS (49-12)(49-232), Harrison Co., **$56,554*****from Upton & King, Canton, traffic bound river grav. 3.835 mi. Perry Rd. and William Shaw Rd., RS (53-349)(53-409), Hickman Co., **$59,531*****from Yager Constr. Co., 315 High St., Frankfort, local bank or creek grav. 3.835 mi. Perry Rd. and William Shaw Rd., RS (53-349)(53-409), Hickman Co., **$52,617*****from Ballard & Hamilton, Bardstown, local or creek grav. 0.012 mi. McCarr-Ransom Rd., RS 98-683, Pike Co., **$164,243*****from George H. Cheek Constr. Co., McClure Bldg., Frankfort, reconstr. and traffic bound limestone surf. 3.963 mi. McAndrews-Ransom Rd., RS 98-823, Pike Co., **$120,113*****from Lovell & Hart Constr. Co., 1091 Manchester St., Lexington, local bank or creek grav. 3.963 mi. McAndrews-Ransom Rd., RS 98-823, Pike Co., **$138,098**. CD 2/8.

Kentucky—State Dpt. Hy., Frankfort, cancelled bids to have been opened Feb. 24, reconstr. traffic bound surf. 5.34 mi. The Goose-Creek-Marvin Chapel Rd. from U. S. 227 approx. 1 mi. N.W. of Worthville and exten. to KY 36 at Marvin Chapel, RS 21-232, Carroll Co.; bit. surf., reconstr. traffic bound surf. 12.58 mi. The Browning Rd. from U. S. 68, 8 mi. south of Bowling Green to Butler Co. line, RS 114-468, Warren Co. CD 2/8.

Maryland—State Rds. Comn., Baltimore, Feb. 21, bit., Spec. B, along several sections of hy., incl. 0.769 mi. along U. S. Rte. 413 beginning at intersection of State Rte. 357 and 413 and exten. southwesterly through Marion, and 0.966 mi. beginning at point U. S. Rte. 13, approx. 1,000 ft. north of bridge over Maonokin River and exten. southerly through Princess Anne, and 0.205 mi. along Prince William St. in Princess Anne, Contr. S-180-115 and S-181-115, Somerset Co., from Eastern Hys. Corp., Box 2738, Brooklyn, Baltimore, base **$50,318**. CD 2/8.

Maryland—State Rds. Comn., Baltimore, Feb. 21, bit. surf. Spec. B, along 2 sections hy. 1.91 mi. Kenwood Ave. beginning at Trump Mill Rd., and exten. southeasterly to Old Philadelphia Rd., State Rte. 7, and 0.61 mi. Joppa Rd. beginning at York Rd., U. S. Rte 111, and exten. easterly to Providence Rd., Contr. B-602-415 and B-603-415, Baltimore Co., from Interstate Amiesite Co., Delaware Trust Bldg., Wilmington, Del., base **$93,290**, alternate **$92,074*****bit. surf. Spec. B, 7.804 mi. along Belair Rd., U. S. Rte. 1, beginning at Neckar Ave., approx. 3 mi. east of Baltimore City line and exten. northeasterly to Harford Co. line at Little Gunpowder River, Contr. B-601-415, Baltimore Co., from Harry T. Campbell Sons Corp., Towson, base **$289,000**, alternate **$298,450*****bit. Spec. B, 1.9 mi. along 2 sections Pulaski Hy. beginning at Toll Booth on east side of Susquehanna River Bridge and exten. easterly toward Northeast Rd., Contr. 328-215, Cecil Co., from Bituminous Constr. Co., 3301 Ridgewood Ave., Baltimore, base **$235,378**, alternate **$214,340** bit. Spec. B and adjustments to storm water drainage, along three sections of hy. in Cambridge, incl 0.584 mi. along Dorchester Ave. beginning at State Rte. 343 D-221-115, 0.458 mi. along Maryland Ave. beginning at Sunburst Ave., State Rte. 50, and exten. westerly to Cambridge Creek, D-222-115; and 0.402 mi. along Washington St. beginning at Race St. and exten. westerly to High St. D-223-115; Dorchester Co., and bit. Spec. B, 5.99 mi. along Old Philadelphia Rd., State Rte. 7, beginning at Pulaski Hy., U. S. Rte. 40 and exten. southwesterly through Stepney and Abingdon to Baltimore Branch, Contr. H-329-415, Harford Co., from T. B. Gatch & Sons, Inc., 5928 Belair Rd., Baltimore, base **$62,702**, alternate **$56,897** and **$190,979** respectively***Spec. B bit. along 2 sections hy. incl. 1.023 mi. along Isabella St. in Salisbury, beginning at N. Division St. and exten. to city limits, near West Main St., Wi-250-115, and 12.557 mi. along State Rte. 349, beginning at Rockawalking, 3.6 mi. west of U. S. Rte 213, in Salisbury and exten. westerly towards Tyaskin, Wi-260-115, Wicomico Co., from Easter Hys. Corp., Box 2738, Brooklyn, No. 1, **$304,535**, alternate **$275,831**, CD 2/8***grading, drainage, surf., 1.562 mi. section Maryland Rte. 589, beginning approx. 1.1 mi. S. E. of U. S. Rte. 113 and exten. southeasterly towards Gray's Corner and U. S. Rte. 213, Contr. 285-5-150, Worcester Co., from Pleasanton & Edgell, Inc., Mary St., Dover, Del., **$63,161**. CD 2/14.

Maryland—State Rds. Comn., Baltimore, Feb. 28, b.conc., Spec. B, 5.476 mi. along Grain Hy. U. S. Rte. 301, beginning at Seven Run Hill, approx. 0.75 mi. north of Dorra's Corner, and exten. northerly to 5 Ave., in Glen Burnie, Contr. AA 416-315, Anne Arundel Co., from Eastern Hys. Corp., Box 2738, Brooklyn, stone **$195,718**; slag **$178,305*****b.conc. Spec. B wid'n. resurf. 3.49 mi., along Hanover Pike, State Rte. 30, beginning at Baltimore-Carroll Co. line and exten. northwesterly to point approx. 1 mi. north of Hampstead, Contr. CL-317-315, Carroll Co., from Harry T. Campbell Sons Corp., Towson, stone **$159,436**; slag **$161,823*****c.conc. shoulders 2.974 mi. along Belair-Conowingo Rd., U. S. Rte. 1, beginning at point approx. 6 mi. northeast of Belair and exten. northeasterly towards Conowingo, Contr. H1328-415, Harford Co., from Charles E. Kirn, Inc., 2023 W. North Ave., Baltimore, **$80,482**. CD 2/15.

Massachusetts—Commonwealth of Mass., Dpt. P. Wks., Boston, rejected bids Feb. 7, hy. and bridge, Contr. A, U-336 (3), Plymouth, L. B. **$607,655**. Will be re-advertised. CD 2/14, under LB.

▲ **Massachusetts**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Feb. 21, hy. and bridge, Reading-Wakefield, U-272 (19), from A. V. Taurasi Co., Inc., 139 Jacques St., Somerville, **$2,104,188.** CD 2/9.

▲ **Massachusetts**—Commonwealth of Mass., P. Wks. Dpt., Boston, Feb. 28, state hy. and bridge constr., U-272 (24), Waltham and Weston, from J. F. Fitzgerald Constr. Co., 212 Essex St., Boston, **$3,830,086**. CD 2/9.

Miss., Sumner—Town, Town Hall, Feb. 28, street imprvs., from Dunn Constr., First Federal S. & L. Bldg., Jackson, **$81,000**. CD 2/23.

▲ **Nebraska**—State Dpt. Roads & Irrigation, Lincoln, Feb. 24, grav. culverts, armor coat, stabil. base, bit. mat., F-485, Grant-Imperial, Perkins and Chase Counties, from Lee & Johnson, Inc., 215 Insurance Exchange Bldg., Sioux City, Ia., **$213,834*****grav., c. conc. paving, culverts, F-229, Tekamah-Decatur, Burt Co., from Booth & Olson, Inc., 529 Insurance Exchange Bldg., Sioux City, Ia., **$296,808*****grav., c. conc. paving, culverts, bridges, F-46 and F-254, McCook-Arapahoe, Red Willow Co., and grav., c. conc. paving, bridge, F-71, Orleans-Alma, Harlan Co., from Dobson & Robinson, 823 1st Natl. Bank Bldg., Lincoln, **$212,170** and **$140,740** respectively***c. conc. paving, culverts, bridge, F-269, Randolph-Belden, Cedar Co., from Abel Constr. Co., 895 N. 16 St., Lincoln, **$527,639.** CD 2/13.

New York—Bureau Contracts & Accounts, Albany, Mar. 1, b. conc. opt. 2.6 mi. New Hempstead Road-Roberts Rd., Coyles Corners-Short Clove, S.H. 9005, Proj. S 311 (1), Proj. FASS 50-2, RC 50-4, Rockland Co., from County Asphalt, Inc., 129 Main St., Tarrytown, **$292,739**. Est. $360,000. CD 1/27.

North Carolina—State Hy. & P. Wks. Comn., Raleigh, Feb. 28, traffic bound macad., bit. surf. tr. or b. conc. 34.6 mi. 19 sects. county roads, Proj. No. 10-9-85-204, Buncombe Co., from Dickerson, Inc., Monroe, **$310,048**, est. $400,000-$500,000***traffic bound macad., bit. surf. tr. or b. conc. 30.4 mi. 15 sects. county roads, Proj. No. 10-9-93-201, Henderson Co., from Ballenger Paving Co., Box 1046, Greenville, S. C., **$323,456**, est. $300,000-$400,000***bit. surf. tr., sand asph. or b. conc. 30 mi. 6 sects. county roads, Proj. No. 6-9-52-203, Harnett Co., from J. F. Cleckley & Co., Orangeburg, S. C., **$83,188**, est. $75,000-$100,000***bit. surf. tr., sand asph. or b. conc., 38.8 mi. 11 sects. county roads, Proj. No. 6-9-55-208, 6-9-54-205, BS 6-7-50-24, Lee, Chatham and Moore Counties, from F. D. Cline Constr. Co., Box 349, Raleigh, **$107,689**, est. $100,000-$125,000***bit. surf. tr., sand asph. or b. conc. 39.9 mi. 8 sects. county roads, Proj. No. 6-9-56-205, Randolph Co., and bit. surf. tr. or b. conc., 56.3 mi. 25 sects. county roads, Proj. No. 7-9-61-212, Mecklenburg Co., from Blythe Bros. Co., 424 S. Brevard St., Charlotte, **$119,835**, est. $100,000-$125,000 and **$184,240**, est. $200,000-$225,000 respectively.

furnishing, hauling, and dumping traffic bound macad. 29.3 mi. 17 sects. county roads, Proj. No. 7-9-61-210, and furnishing, hauling, dumping traffic bound macad. 27 mi., 8 sects. county roads, Proj. No. 7-9-61-211 both Mecklenburg Co., from Superior Stone Co., Insurance Bldg., Raleigh, **$114,144**, est. $150,000-$175,000 and **$108,864**, est. $125,000-$150,000 respectively***bit. surf. tr., sand asph. or b. conc. 43.3 mi. 10 sects. county roads, Proj. No. 6-9-51-207, 6-9-56-207, Davidson and Randolph Counties, from Suber & Co., Inc., Box B, Whitmire, S.C., **$143,664**, est. $200,000-$225,000***traffic bound macad., or PCSBC, mit. surf. tr. or b. conc. 5-8 mi. from end bit. surf. tr. on county road southeast of Union Mills, southeast, to Edge paved connection on U. S. 64, north of Rutherfordton, Proj. No. 9-552, S-211 (2), Rutherford Co., from A. R. Thompson Contractors, Inc., Rutherfordton, **$70,388**, est. $75,000-$100,000***c. conc. wid'n. and b. conc. binder and surf. 3.2 mi. U. S. 52, 421, 311 and 158, wid'n. and resurf. various sects. streets in Winston-Salem, Proj. No. 5900-832, Forsyth Co., from Atlantic Bitulithic Co., 1400 Rosneath Rd., Richmond 21, Va., **$68,175**, est. $50,000-$75,000.

sand asph. base and surf. course 12.8 mi. from point in Wilmington St. in Richlands, southeast to intersection with U. S. 17, east of Jacksonville, Proj. No. 2-454, S-277 (2), Onslow Co., from Barrus Constr. Co., Box 561, Kinston, **$127,451**, est. $125,000-$150,000***sand asph. base and surf. course 13.85 mi. from point on U. S. 64 east of Plymouth, east through Westover and Mackeys to U. S. 64 at Pleasant Grove, 2 other sects. in vicinity of Roper and Albemarle Beach, Proj. No. 2-652, S-274 (2), 2-9-26-204, Washington Co., from Nello L. Teer Co., Box 1311 Durham, **$131,442**, est. $125,000-$150,000***grading 2.93 mi. from intersection of Atkins and Person St. in Fayettville, southwest crossing A. R. R. R. to intersection with U. S. 301 beyond west city limits, Proj. No. 3423, U. I. 672 (2), Cumberland Co., from Grannis & Sloan, Inc., Fayetteville, **$92,483**, est. $150,000-$175,000***traffic bound macad., or PCSBC, bit. surf. tr. or sand asph. or b. conc. and structures 4.37 mi. from point at edge pavement south of Midway School, southeast to point at edge pavement on county road between U. S. 29 and 109, Proj. No. 6-155, S-302 (1), Davidson Co., from J. K. Cecil & Sons, Lexington, **$71,241**, est. $50,000-$75,000.

traffic bound macad., bit. surf. tr. or sand asph. or b. conc. and structures 8.12 mi. N. C. 200 north of intersection with N. C. 218, north to a point 0.5 mi. south of Stanfield, Proj. No. 6996, S-3 (4), Union and Stanley Counties, from Ben B. Propst, Concord, **$130,013**, est. $150,000-$175,000***traffic bound macad., b. conc. binder and surf. 1.6 mi. U. S. 74, west of Mooresboro, east through Mooresboro to bridge over Sandy Run Creek, Proj. No. 8245, F-137 (9), Cleveland Co., from E. H. Hines Constr. Co., Inc., Box 924, Greenwood, **$62,586**, est. $50,000-$75,000***traffic bound macad., b. conc. binder and surf. and structures 1.98 mi. U. S. 70 and 64 from point near intersection with U. S. 221, south to intersection with N. C. 80, Proj. 8531, (rdy) F-84 (10), (strs), F-261 (4), McDowell Co., roadway from B. G. Young & Son, Box 333, Johnston City, Tenn., **$97,589**, est $100,000-$125,000; structures, from F. A. Triplett, Inc., Chester, S. C., **$86,325**, est. $75,000-$100,000***c. conc. paving 3.34 mi. U. S. 19 and 23, from point in Haywood Rd. in Asheville at Lucerne Ave. east, crossing French Broad River to point in Patton Ave. at Clingman Ave. and other connections, Proj. No. 9078, U-661 (4) and c. conc. paving 1.54 mi. U. S. 19 and 23 from point approx. 1.4 mi. northeast of Enka to point in Asheville 800 ft. northeast of city limits, Proj. 9085, F-247 (5), both Buncombe Co., from Wm. F. Bowe & Co., Augusta, Ga., **$247,235**, est. $250,000-$300,000 and **$104,925**, est. $100,000-$125,000 respectively. CD 2/17.

▲ **North Carolina**—State Hy. & P. Wks. Comn., Raleigh, Mar. 2, from Barrus Constr. Co., Box 561, Kinston, added material, sand asph. base or b. conc. binder and b. conc. surf. course 4.42 mi. U. S. 117 from point in U. S. 117 approx. 0.5 mi. south of south city limits of Goldsboro, north and northeast to point in U. S. 117 north of city limits, Proj. 2851 U-13 (1), Wayne Co., **$68,628**, est. $75,000-$100,000***from Dickerson, Inc., Box 391, Monroe, traffic bound macad. b. conc. binder and surf. 2.73 mi. U. S. 301 from point approx. 4 mi. northeast of Wilson to point near overhead crossing of A. C. L. R. R. 0.5 mi. south of Elm City, Proj. 2970, F-117 (6), **$66,655**, est. $50,000-$75,000; traffic bound macad., bit. surf. tr. or b. conc. 8.3 mi. Everett, Little River, Green Acres, Elm Bond and Island Ford Rds., Proj. 10-9-99-203, Transylvania Co. **$88,988**, est. $100,000-$125,000.***from Wright Contg. Co., Box 1537 Columbus, Ga., c. conc. 3.22 mi. U.S. 29 and 74, from point 888 ft. west of city limith of Gastonia, east through Gastonia to point east of city limits, Proj. 6357 U-456 (4), U-37 (6), Gaston Co., **$605,488**, est. $400,000-$500,000.

from J. S. Hill Constr. Co., Washington, N. C. traffic bound macad., bit. surf. tr. or sand asph. surf. 10.45 mi. from point on U. S. 17, south of Chocowinity, on county road to intersection with N. C. 33 east of Chocowinity then on county road to mouth of Blounts Creek, Proj. 2-9-15-208, Beaufort Co., **$173,485**, est $175,000-$200,000***from Sam Finley, Inc., Box 2389, Roanoke, Va., bit. surf. tr. or sand asph. surf course 16.3 mi. from U. S. 258 at Lizzie north to the Wilson Co. line via Wooten's crossroads and Appie, from Wilson Co. line southeast to junction 1.8 mi. south of Appie, Proj. 2-9-18-202, Greene Co., **$58,080**, est. $50,000-$75,000; bit. surf. tr. or b. conc. 43.95 mi. Parker Store Rd. by Union School to Landsford, Pyler Mill, Ridge Road, and Jim Chaney Rds., Monroe-Olive Branch to Fairview, Indian Trail Sardis Rd., New Town Rd., N. C. 75 west to N. C. 16, Proj. 7-9-66-209, Union Co. **$127,985**, est. $150,000-$175,000; bit. surf. tr. or sand asph. or b. conc. 35.7 mi. 9 sections of county roads, Proj. 6-9-55-206, Moore Co., **$97,383**, est. $100,000-$125,000; sand asph. surf. course 26.4 mi. surfacing 5 sections county roads, Proj. 3-9-31-207, 3-9-34-206, Duplin and Sampson Counties, **$137,781**, est. $150,000-$175,000.

from Zeigler-Cline Constr. Co., Box 386, Fayetteville, sand asph. base and surf. course 23.9 mi. U. S. 74 and 76 between Bolton and Whiteville and from Bolton east 5 mi. from junction U. S. 701 south of Whiteville through Brunswick on N. C. 130, Proj. BS 3-6-29-124, Columbus Co., **$124,717**, est. $125,000-$150,000; sand asph. surf. course 12.3 mi. extension of Autryville and Salemburg Rd. from end of pavement east through Salemburg to Highhouse Rd. via Bearskin, Proj. 3-9-34-207, Sampson Co., **$50,908**, est. $50,000-$75,000***from Shepherd Constr. Co., Box 3299, Stat. F, Atlanta, Ga., b. conc. binder and surf. course 12.25 mi. U. S. 301 from north city limits of Rocky Mount to point in Whitaker near north city limits, Proj. BS 4-6-37-134, Nash Co., **$109,740**, est. $125,000-$150,000***from J. F. Cleckley & Co., Orangeburg, S. C., bit. surf. tr. or sand asph. or b. conc. 28.4 mi. 11 sections county roads, Proj. 6-9-57-211, Robeson Co., **$77,980**, est. $75,000-$100,000 bit. surf. tr. or sand asph. or b. conc. 32 mi. 9 sections county roads, Proj. 6-9-57-209, Robeson Co., **$92,596**, est. $75,000-$100,000***from Ballenger Paving Co., Greenville, S. C. bit. surf. tr. or sand asph. or b. conc. 252 mi. 9 sections county roads Proj. 6-9-58-207, Scotland Co., **$67,212**, est. $50,000-$75,000.

from Thompson-Arthur Constr. Co., Box 1197, Greensboro, bit. surf. tr. or sand asph. or b. conc. 17.8 mi. from Bennett toward Siler City 11.4 mi., from U. S. 421 at Mt. Vernon Springs to Mt. Vernon Springs Hotel, from Silk Hope north to Alamance Co., Proj. 6-9-50-207, Chatham Co., **$58,076**, est. $50,000-$75,000***from White Constr. Co., Lillington, sand asph. surf. course 9.5 mi. from California on N. C. 121 on county road to N. C. 43 via Kings and Dupree Crossroads, from Kings Crossroads to Falkland, Proj. 2-9-24-203, Pitt Co., **$57,521**, est. $50,000-$75,000; sand asph. surf. course 10.27. mi. from Willow Green to Longs Crossroads on U. S. 264 from point east of Stokes, east to Beaufort Co. line, from junction of county road in Penny Hill, east to county road between Belvoir and U. S. 64, Proj. 2-9-18-205, 2-9-24-207, Green and Pitt Counties, **$89,421**, est. $75,000-

Continued on Page 66)

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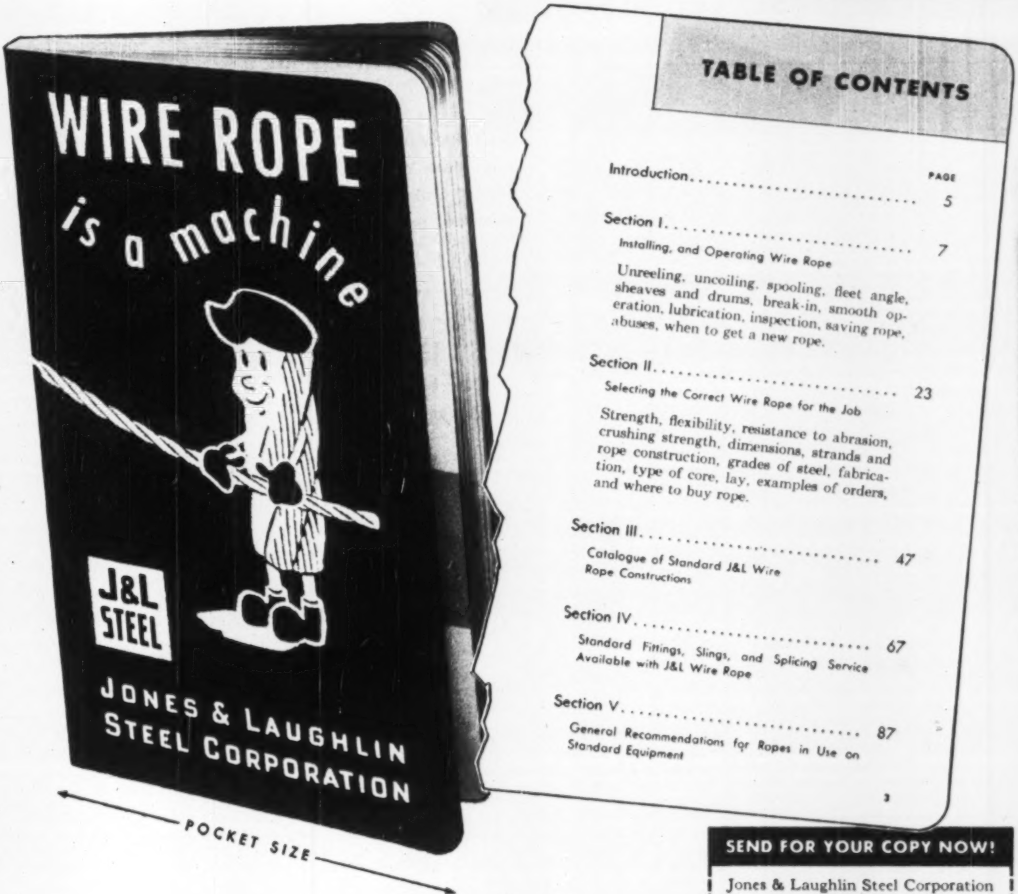

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$100,000***from H. R. Stewart & Co., 5 Westchester Dr., Asheville, traffic bound macad., bit. surf., tr. or b. conc. 12 mi. 10 sections county roads, Proj. 10-9-92-204, Haywood Co., **$113,712**, est. $150,000-$175,000.

frcm A. R. Thompson Contractor, Inc., Rutherfordton, STBC, bit. surf. tr. or b. conc. 19.6 mi. Waco to Goforths Store, Oak Grove to Kings Mountain Baker's Crossroads to Cleveland-Gastin Co. line, Cleveland-Gaston Co. line to Helms Store, from N. C. 277 to Lincoln-Gaston Co. line, Dallas to High Shoal Proj. 9-9-80-204, 9-9-81-204, Cleveland and Gaston Counties, **$131,862**, est. $175,000-$200,000***from Ray D. Lowder, Inc., Albemarle, S. T. B. C., traffic bound macad., bit. surf. tr. or b. conc. 13.4 mi. Providence Road 200 South, Indian Trail toward Waxhaw, from U. S. 74 south, Old Lancaster Rd. from Waxhaw south, Proj. 7-9-66-207, Union Co., **$91,304**, est. $75,000-$100,000***from Superior Stone Co., Insurance Bldg., Raleigh, furnishing, hauling, dumping on road traffic bound macad., 36.1 mi. 5 sects. county roads, Proj. 7-9-66-208, Union Co., **$136,340**, est. $150,000-$175,000***from Setzer Constr. Co., Hickory, STBC, bit. surf. tr. or b. conc. 9.8 mi. 3 sections county roads, in vicinity of Rhodhiss, Hildebran and Drexel, Proj. 9-9-78-203, Burke Co., **$79,006**, est. $100,000-$125,000. CD 2/20.

▲ **North Dakota**--State Hy. Dpt., Bismarck, Mar. 3, from Western Contg. Corp., 400 Benson Bldg., Sioux City, Ia., air-entrained c. conc. pavement, etc. 15.758 mi. U. S. Hy. 81 from Fargo South to Cass-Richland Co. line, FAP No. F-1 (6), Cass Co., **$772,787*****from W. H. Noel Co., Jamestown, traffic service grav., etc. 10,639 mi. State Hy. 32 from Lisbon south to Ransom-Sargent Co. line, FAP No. F-28 (12), Ransom Co., **$120,188**; traffic service grav., etc. 12.3 mi. State Hy. 7 from Glenfield East, FAP Nos. F-102 (2), F-99 (2), F-17 (7) and F-50 (3), Foster and Griggs Counties, **$123,221***** traffic service grav., etc. 6.202 mi. U. S. Hy. 12 from Marmarth west to North Dakota-Montana state line, U. S. Hy. 12, FAP No. F-379 (13), Slope Co., **$99,836*****from Northern Constr. Co., 509 S. 3 St., Grand Forks, b. conc. surf., etc. 11.275 mi. State Hy. 1 from Oakes north and south, FAP No. F-211 (5), Dickey Co., **$246,646*****from P. A. Bradbury Constr. Co., 124 1st Ave. N. E., Aberdeen, S. D., base, b. conc. surf., etc. 13,207 mi. State Hys. 17 and 20 from Starkweather to south of Webster, FASP Nos. S-153 (3) and S-224 (8), Ramsey Co., **$289,715*****from Peter Kiewit & Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb., base, b. conc. surf., etc. 18.437 mi. State Hy. 3 from Dunseith south to Rolette-Pierce Co. line, FASP No. S-331 (4), Rolette Co., **$431,702**. CD 2/16.

▲ **Pennsylvania**—State Hy. and Bridge Auth., 506 N. Office Bldg., Harrisburg, Mar. 3, Schedule 1, construct divided highway consisting of two 24 ft. lanes of c. conc. pavement on each side of a variable width concrete and earth divisor area, incl. construction of one rein.-con. structure and three I-beam bridges, grading and drainage variable 82 to 130 ft. in width, crushed stone base with bit. surf. 22 ft. wide and two I-beam bridges, grading 6,749 lin. ft. roadbed for relocating railroad, incl. two plate girder bridges and one rein.-con. structure and raising of 4,650 lin. ft. railroad roadbed incl. raising an existing bridge superstructure and construct one plate girder bridge, 20,437 ft. L. R. 769 (1-A); 46174 (1); 769 (1-B), from village of King of Prussia to village of Gulph Mills, a sect. of Schuylkill Expressway to link Pennsylvania Turnpike with city of Phila., Montgomery Co., from James D. Morrissey, Inc., 9119 Frankford Ave., Phila., **$2,616,669**; Schedule 2, construct one plate girder bridge, from Francis A. Canuso & Sons, 804 S. 12 St., Phila., **$772,361**. CD 2/13.

CONTRACTS AWARDED

Tex., Galena Park—Galena Pines, Inc., Galena Park, street paving, to Marvin Brown, Inc., 4304 Dixie Dr., Houston, **$52,200**. Still, Wildman & Crockett, 3509 Almeda Rd., Houston, engrs.

Tex., Kountze—Hardin Co., c/o Kountze Road Dist., Kountze, hard surf. some streets in Kountze townsite, **$95,000**; hard surf. in Kountze Road Dist., areas adjacent to city, **$115,000**. Own forces. GD 9/16.

EARTHWORK, WATERWAYS

BIDS ASKED

† **N. J., East Orange**—B.D. 3/22—U. S. Eng., 80 Lafayette St., New York 13, N. Y., site preparation, excavation and storm sewer at Veterans Admin. Hospital, Tremont Ave. and Center St., No. 30-075-50-75. Extended date. CD 2/8.

† **Oregon**—B.A. 3/28—U. S. Eng., Pittock Block, Portland, construct bank protection works and channel imprvs. along both banks of Coast Fork of Willamette River at McCully location, 5 mi. southeast of Eugene, Lane Co., CIVENG-35-026-50-279.

† **New York**—B.A. 4/4—U. S. Eng., 80 Lafayette St., New York, Zone 13, channel imprvs., Hoosick Falls, Renssalaer Co., CIVENG-30-075-50-67. $350,-000. Extended date.

† **Nebraska**—B.A. On or about 4/5—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, bank protection for Omaha Floodwall and Minne Lusa Sewer, Omaha, Douglas Co. Spec. No. CIVENG-25-066-50-142

† **California**—B.A. 4/13—U. S. Eng., Wright Bldg., Sacramento, earth fill dam, concrete spillway etc. 4 mi. east of Farmington, San Joaquin Co., Spec. 041-167-50-21.

LOW BIDDERS

† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, Feb. 28, 2,000 ft. Live Oak Wash Channel, 20 ft. wide, San Gabriel River La Verne, CIVENG-

04-343-50-28, from Gould & Cross, 19114 S. Vermont Ave., Gardena, **$341,512**. Est. $200,000, $500,000. CD 2/8.

† **Calif., Los Angeles**—U. S. Eng., 751 S. Figueroa St., Los Angeles, Feb. 24, Compton Creek imprvt. Hooper Ave. storm drain to Lanzit Ave., CIVENG-04-343-50-26, from P. & J. Artukovith, 13305 S. San Pedro St., **$651,271.** Est. $200,000-$500,000. CD 1/27.

CONTRACTS AWARDED

† **Idaho**—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., bank protection on Kootenai River at vicinity of Hy. 95 bridge, Bonners Ferry, CIVENG-45-108-50-58, to Stoen's Rock & Landscape Co., 8406 Aurora Ave., Seattle 3, Wash., **$31,943**. Est. 26,511.

Tex., Galena Park—Galena Pines, Inc., Galena Park, drainage, open type, to Marvin Brown, Inc., 4304 Dixie Dr., Houston, **$35,965.** Still, Wildman & Crockett, 3509 Almeda Rd., Houston, engrs.

AIRPORTS

BIDS ASKED

† **S. D., Rapid City**—PARKING APRON—B.A. About 4/11—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., addnl. parking apron for Rapid City Air Force Base, Weaver, Spec. No. 25-066-50-7. CD 10/26/48.

LOW BIDDERS

▲ **Ill., Chicago**—TERMINAL—City, Dpt. P. Wks., City Hall, Zone 3, Feb. 28, Terminal Bldg. Finger B, initial construction Contr. No. 2 O'Hare Field, Chicago International Airport, near Des Plaines, from Great Lakes Constr. Co., 25 E. Jackson Blvd., Chicago. **$1,320,899.** CD 2/7.

PUBLIC BUILDINGS

BIDS ASKED

Pa., Phila.—HOSPITAL—B.A. 3/20—Dpt. P. Health, City Hall Annex, boiler house alterations, addns., Phila. General Hospital. Approx. $75,000. CD 2/3/57.

Que., Lachine—SCHOOL—B. A. 3/20—Mrs. V. Dixon, secy., Protestant School Comn., 3460 McTavish St., Montreal, 190 x 340 x 55 ft., rein.-con., brick school on 48 Ave. Plans deposit $150. J. C. Meadowcroft, 4115 W. Sherbrooke St., Montreal, archt.

Ark., Little Rock—PHYSICAL EDUCATION—B.A. 3/21—Little Rock School Bd., 8 and Louisiana Sts., physical education bldg. at Little Rock Senior High School, **$300,000**. CD 10/27.49.

▲ **Conn., New Britain**—HOUSING—B. A. 3/21—City of New Britain Housing Auth., 16 Armistice St., 180 family units Corbin Ave. $2,000,000. Plans deposit $40. Henry Ludorf, 100 Pearl St., Hartford, archt. CD 11/2.

Mass., Stoneham—SCHOOL—B.A. 3/21—Town, Bd. Selectmen, Town Hall, 2 story, brick, steel school, $300,000. Plans deposit $25 refundable. Kilham, Hopkins Greeley & Brodie, 19 Arlington St., Boston, archts. CD 9/16.

† **Mass., Truro**—BUILDINGS, etc.—B.A. 3/21—U. S. Eng., Bldg. 21, Naval Drydock, South Boston, six 1 story, rein.-con., concrete block bldgs. twelve 2 story, wood concrete block, bldgs., utilities, CIVENG 19-016-50-21. Plans deposit $60. Extended date. CD 2/1, under Unclassified.

Mich., Owosso—SCHOOLS—B. A. 3/21—Bd. Educ., Union School Dist., 2 elementary schools and 2 high school addns. $990,000. Plans deposit $25. Warren S. Holmes Co., Olds Tower, Lansing, archt.

Minn., Hanska—SCHOOL—B.A. 3/21—Bd. Educ., M. Ouren, clk., 3 story, bsmnt., 102x116 ft. school addn. Approx. $300,000. Plans deposit $15, Long & Thorshov, 400 Metropolitan Life Bldg., Minneapolis, archts. CD 2/16.

Calif., Columbia—ARMORY—B.A. 3/28—State Div. Architecture, P. Wks. Bldg., Sacramento, type A, rein.-con. armory for California National Guard. Plans deposit $25. Anson Boyd, Sacramento, state archt.

▲ **Calif., Ceres**—HOSPITAL—B.A. 3/29—Stanislaus County Memorial Hospital Assn., 910 11 St., Modesto, 2 story, L-shaped, rein.-con. 106-bed hospital, near here. $1,000,000. Plans deposit $100. Robt. Stanton & Chester R. Phillips, Box 2177 Carmel, archts. CD 2/1. CD 2/19/48

La., Port Allen—SCHOOL—B.A. 3/29—West Baton Rouge Parish, Port Allen, face brick, tile, steel joist, Port Allen School. Goodman & Miller, 125 North Blvd., Baton Rouge, archts. CD 11/2.

† **Ohio**—DWELLINGS, UTILITIES—B.A. 3/29—U. S. Eng., Madison Ave. and 8 St. W., Huntington 18, W. Va., dwellings, utilities, Burr Oak Reservoir Proj., East Branch of Sunday Creek, Serial No. CIVENG-46-022-50-86. CD 2/17.

▲ **Ore., Portland**—OFFICE—B.A. 4/3—State Bd. Control, Salem, 10 story, rein.-con. state office, 5 and Clay Sts. $2,500,000. Dougan, Heims & Caine, Terminal Sales Bldg., archts. CD 9/23.

▲† **New York**—BUILDINGS, etc.—B.A. 4/6—U. S. Eng., 80 Lafayette St., New York, Zone 13, buildings, utilities, No. Eng-30-975-50-67. $1,000,000. Extended date. CD 2/1.

LOW BIDDERS

Calif., Covina—UTILITY—City School Dist., Covina, Feb. 21, 7,385 ft. utility bldgs., 3225 S. Baranca St., from Wm. Crowell Co., 170 E. California St., Pasadena. **$198,440.** CD 2/13.

Calif., Los Angeles—GARAGE, etc.—Bd. Educ., 1425 S. San Pedro St., Feb. 24, 2 story underground garage and 3 story office, from Alliance Constr. Co., 35 N. Raymond Ave., Pasadena. **$954,630.** CD 2/3.

† **Calif., Point Mugu**—INSTRUMENTATION—Yards & Docks Annex, Navy Dpt., Arlington, Va., Feb. 28, 1 story, 100x260 ft. rein.-con. instrumentation bldg., and 5 story 22x44 ft. tower, Spec. 23462, from AL-CO Co., 5423 Flemish Village Lane, Los Angeles. **$461,895.**

Tex., Dallas—SCHOOL—Dallas Independent School Dist., Akard and Royal Sts., cancelled bids to have been opened Mar. 14, Lincoln High School addn. **$350,000.** CD 3/1.

Tex., Irving—SCHOOLS—Irving Independent School Dist., Irving, Feb. 24, two stucco, brick schools, concrete slab fdn. and frame, from Carpenter Bros., 1335 Plowman St., Dallas. **$273,491.** Est. $425,000. CD 2/7.

† **Location Withheld**—BUILDINGS, etc.—U. S. Eng., 80 Lafayette St., New York 13, N. Y., Feb. 28, misc. bldgs., utilities, No. Eng-30-075-50-60, from Arthur Venneri Co., 259 N. Broad St., Elizabeth, N. J. **$778,499.** CD 1/13.

CONTRACTS AWARDED

▲ **Calif., Los Angeles**—LAW—Bd. Regents University of California, 405 Hilgard Ave., 3 story, bsmnt., rein.-con., brick 70,000 sq. ft. law bldg., to R. J. Daum Constr. Co., 6803 West Blvd. **$1,014,581.** Bids 12/21, awarded 2/8. CD 12/28, under LB.

Idaho, Orofino—UTILITY—State Comr. P. Wks., Boise, utility bldg. at State Hospital North, to J. H. Wise & Son, 424 Broadway, Boise. **$240,451.** CD 3/2, under LB.

† **Mich., Fort Custer** — APARTMENTS — U. S. Eng., Fort Custer, conversion 56 barracks into apartments, to F. J. Skidmore & Son, Battle Creek. **$686,650.**

COMMERCIAL BUILDINGS

SOON LETS CONTRACT

Ill., Aurora—RECTORY, etc.—Holy Angels Parish, 23 Locust St., soon lets contract, 3 story rectory, parish hall and 1 story church, both concrete, brick, steel. Pace Assoc., 53 W. Jackson St., Chicago, archts.

▲ **R. I., Quonset Point and Davisville**—HOUSING—Dist. Pub. Wks. Office, 1st Naval Dist., Navy Bldg., 495 Summer St., Boston 10, Mass., soon lets contract construct, finance, manage 120 dwelling units at Naval Air Station, Quonset Point and at Naval Yards and Docks Supply Depot, Davisville. $1,300,000.

▲ **Tex., Houston**—OFFICE—Gulf Building Corp., Gulf Bldg., soon lets contract 16 story, bsmnt office, $2,500,000. A. C. Finn, Bankers Mortgage Bldg., archt. Robert J. Cummins, and Reginald F. Taylor, Bankers Mortgage Bldg., engrs. CD 2/2.

LOW BIDDERS

▲ **N. J., Jersey City**—HOUSING—Prudential Insurance Co., 763 Broad St., Newark, project abandoned, housing on 22 acre site bounded by Westside Ave., Boardman Parkway and Audubon Ave., **$4,000,000.** Kelly & Gruzen, 80 Fifth Ave., New York 3, N. Y., archts. CD 1/7/49.

CONTRACTS AWARDED

Calif., Compton—DWELLINGS—Mrs. W. Frame, 10222 S. St. Andres Pl., Los Angeles, and Carl Sopp, 1038 E. Olive St., 156 frame, stucco dwellings, Bennett, Caldwell, Tichenor and Claud Sts., to James Norris, 12433 S. San Pedro St., Los Angeles. Approx. **$780,000.** Southwest Drafting Service, 2724 W. Florence Ave., Los Angeles, archts.

▲ **Calif., Los Angeles** — APARTMENTS — Chesapeake Bldg. Corp., c/o Max Maltzman, archt., 4015 W. Jefferson St., 29 two story 400,000 sq. ft. apartments at Rodeo and Santa Barbara Sts., to W. E. Robertson Co., 4015 W. Jefferson St., Approx. **$4,000,000.**

Calif., Los Angeles—CHURCH—Roman Catholic Archbishop 714 W. Olympic St., 80x146 ft., rein.-con., St. Mathias Church, 3095 Florence Ave., to Barrett & Hilp, 3671 W. 6 St., Los Angeles, **$275,000.** Kauzor Bros., 2033 W. 7 St., archt.

Calif., Whittier—DWELLINGS—H. M. Brinker & Son, 655 Van Ness St., Los Angeles, 100 frame, stucco dwellings. Owner builds, **$600,000.** Lawrence B. Clapp, 1320 2 St., Santa Monica, archt.

▲ **Ill., Chicago** — DEPARTMENT STORE — Goldblatt Department Store, Madison and Paulina Sts., Zone 12, 1 story, bsmnt., 125x467 ft. department store, to Inland Constr. Co., 134 S. La Salle St., Zone 3, **$1,400,000.** Friedman, Alschuler & Sincere, 223 W. Jackson St., Zone 6, archts. Bids 2/6, awarded 2/23. CD 1/30.

▲ **Md., Baltimore**—HOUSING—The Fenwick Corp. of Baltimore, 11 E. Fayette St., one hundred forty-seven, 2 story, brick, row type houses, 3600-68, 3601-93, Dudley Ave., 3638-98 and 3637 to 99½ Register Ave., separate contracts, **$1,035,000.** Lawrence A. Menefee, 376 N. Charles St., archt.

R. I., East Providence—HOUSING—Ralph D. Ordine, 45 Prescott Ave., frame housing, Glenrose Park. Owner builds. **$250,000.**

Tex., Houston — DWELLINGS — Ruberfield Realty Co., 5223 Humble Rd., 35 dwellings, 9000 Chocolate Bayou, to Texas Building & Real Estate Corp., 5223 Humble Rd. Approx. **$250,000.** CD 3/2.

Utah, Salt Lake City—COMMERCIAL—Papanikolas Bros., c/o Nick E. Papanikolas, 1899 Imperial St., 46 unit modernistic South American Architecture commercial bldg., 21 South and 2nd East Sts. to Cannon-Papanikolas Constr. Co., 8927 W. 2700 South St., **$500,000.** Woods & Woods, 19 W. South Temple St., archts.

INDUSTRIAL BUILDINGS

BIDS ASKED

Tex., San Antonio—STORAGE, etc.—B.A. 3/28—Humble Oil & Refining Co., Sales Dept., Humble Bldg., Houston, bulk station, products terminal, warehouse, garage and shop, electric control bldg., appurtenances for terminal proj., $250,000, Leroy F. Skubic, 53 W. Jackson Blvd., Chicago, Ill., engr.; truck and railway loading docks, $75,000.

▲ **Tex., Altair**—GASOLINE PLANT—Bids Asked—Superior Oil Co., Oil & Gas Bldg., Houston, (selected list bidders) gasoline plant. $1,500,000. CD 3/3.

▲ **Tex., Etter**—CHEMICAL PLANT—Bids Asked—Phillips Chemical Co., Etter, 100,000 tons annually chemical plant expansion, Approx. $3,000,000. CD 2/7.

CONTRACTS AWARDED

Calif., Woodland — WAREHOUSE — Adams, Schwab & Adams, 428 Main St., steel, concrete bulk grain warehouse to Bayles-Joost, 24 California St., San Francisco, approx. **$225,000.**

Kan., St. Francis—GRAIN ELEVATOR—Hart-Bartlett-Sturtevant Grain Co., St. Francis, cement tube type grain elevator, to Jack Constr. Co., Security National Bank Bldg., Kansas City, Kan., **$200,000.**

Que., St. Laurent—FACTORY—Canadian Industrial Glass Co. Ltd., 8 Napoleon St., 1 story, concrete, brick factory, to L. Donolo, Inc., 8320 St. Lawrence St., Montreal **$750,000.** E. Peters, c/o owner, archt. CD 1/23.

UNCLASSIFIED

BIDS ASKED

† **N. C., Fort Bragg**—UNDERGROUND CONDUIT, etc.—B.A. After 3/15—U. S. Eng., 308 Customhouse, Wilmington, underground conduit, pull boxes, manholes and installation of telephone cables. Inv. No. Eng.-31-075-50-3. CD 3/6.

Pennsylvania—TOLL BOOTHS—B.A. 3/20—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, 36 toll booths with canopies and equipment and accessories for 50 traffic lanes at 14 interchange toll plazas on eastern and western extens. of Pennsylvania Turnpike. Plans deposit $7.50. R. B. Stone, c/o owner, ch. engr.

Pa., West Chester—STAIR TOWERS—B.A. 3/22—General State Auth., 18 and Herr Sts., Harrisburg, fireproof stair towers in Freshman Hall at West Chester State Teachers College, incl. repairs to Reynolds Dormitory. $66,000. Plans deposit $2.50. Douglas M. Blum, 23 S. Main St., Phoenixville, archt. A. F. Jones, c/o owner, ch. engr. CD 12/23.

† **Neb., Maxwell**—CEMETERY FACILITIES—B.A. On Or About 3/30—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, addnl. facilities at Fort McPherson National Cemetery, approx. 15 mi. southeast of North Platte, Lincoln Co., Spec. No. 25-066-50-4.

N. S. Deepbrook—WHARF REPAIRS—B.A. 4/19—J. D. McCarthy, secy. Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., Tender No. G-3-28-377. Approx. $60,000. Plans deposit $25.

Missouri—RURAL DISTRIBUTION LINES—B.A. About 4/28—Barton Co. Electric Co-operative, C. W. Holcomb, Jr. mgr., Lamar, about 50 mi. single-phase and 3 phase rural distr. lines, Approx. $50,000. Frank Horton Co., Lamar, engr. CD 2/9.

LOW BIDDERS

Calif., Los Angeles—TRANSMISSION LINE—Dpt. Water & Power, 207 S. Broadway, rejected bids Feb. 24, Proposal 1 and 3, transmission line from Owens River Gorge to Receiving Station E. CD 2/6.

Calif., Los Angeles—PARK IMPRVT.—Bd. Supervs. Los Angeles Co., 501 Hall of Records, Feb. 28, East Montebello Park Imprvt., from Zengel Constr. Co., 5736 E. Olympic Blvd., **$52,943**, Est. $55,220. CD 2/8.

La., Shreveport—STADIUM—City Council, City Hall, Feb. 25, concrete State Fair Athletic Stadium addn., from Southern Builders, Inc., P. O. Box 1815, **$237,000.** CD 1/25.

New York—DRAINAGE EQUIPMENT—Bd. Transportation, 250 Hudson St., New York, Zone 13, Feb. 24, enlarging capacity of drainage equip. in 11 pump rooms on Line D-IND Div., Queens Boro, from Malan Plumbing Co. Inc., 25-09 42 Rd., Long Island City, **$79,220.** CD 6/21.

Oregon—RURAL DISTRIBUTION LINES—Douglas Electric Co-operative, Pacific Bldg., Roseburg, Feb. 24, 93 mi., 72003-12470 rural distr. lines, incl. clearing and construction, Douglas Co., from Menzel & Kimball, Redding, Calif., **$299,293.** CD 2/8.

CONTRACTS AWARDED

Calif., Los Angeles—TRANSMISSION LINE—Dpt. Water & Power, 207 S. Broadway, transmission line from Owens River Gorge to Receiving Station E, Proposal 2, to Jose Bush Service, 670 Broadway El Centrol, **$586,395.** CD 2/6.

Ia., Davis City—DAM—State Conservation Comn., 914 Grand St., Des Moines, dam, earthwork, shore riprapping, Nine Eagles Lake, near here, to Central Constr. Co., Indianalo, **$100,203.** Bids 2/23. CD 6/16.

▲ **Washington**—SNOWSHEDS—State Hy. Dpt., Olympia, 1,800 ft. rein.-con. snowsheds on Snoqualmie Pass Hy. at Airplane Curve and Lake Keechelus, King and Kittitas Counties, to C. W. Wilder Co. and Gaasland Co., Inc., Bellingham, **$1,015,621.** Bids 2/28. CD 2/13.

END ANNOYING AND EXPENSIVE SPRING BREAK-UPS THE SOIL-CEMENT WAY

SPRING break-ups make many low-type roads and streets almost impassable with mud, ruts and potholes. Such conditions vex motorists, overburden maintenance crews and require costly repairs that gall taxpayers—who foot the bills.

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CONSTRUCTION REPORTS Second Section

WATER SUPPLY

BIDS ASKED

Ia., Humboldt—B. A. 3/24—City, City Hall, water filtration and storage plant addn. $40,000. H. R. Green Co., 417-1 Ave. S. E., Cedar Rapids, engr.

Tex., Pasadena—Bids Asked—George W. Batten Co., 1620 Mo St. Houston, water lines facilities, Berkshire Village, southeast sect. of city. $45,000.

Tex., San Antonio—Bids Asked—E. J. Burke & Sons, 4220 S. Zarzamora St., c.i. water lines. $40,000. W. W. Vander Heck, c/o owner, engr.

Tex., San Antonio—Bids Asked—Lee & Orts, Gunter Bldg., water lines, facilities, between S. Flores St. and Pleasanton Rd. $35,000.

Wis., Appleton—Bids Asked—City, City Hall, WW impvt., (A) discharge line (B) influent conduit. Total est. $150,000 Alvord Burdick Howson, 20 N. Wacker St., Chicago, Zone 6, Ill., engrs. CD 3/3.

LOW BIDDERS

Mass., Lynn—Commonwealth of Mass., Metropolitan Dist. Comn., 20 Somerset St., Boston, Mar. 2, Contr. 169 furnish, lay 11,700 lin. ft. 36 in. c.i. pipe, from S. Ratondi & Sons, 140 Franklin St., Stoneham; **$388,620.** CD 2/14.

CONTRACTS AWARDED

Mass., Bourne—Town, Water Dist., install water mains, to Graccio Bros., 9 Cross St., Fairhaven, **$41,600.** Bids 2/28. Whitman & Howard, 89 Broad St., Boston, engrs.

Tex., Houston—Glenmore Forest, c/o Homer Y. Jones, Sterling Bldg., water lines, facilities, north of Neuthard Rd., own forces. Approx. **$35,000.** Thomas D. Heaney, 2113 State St., engr.

Wash., La Conner—City, City Hall, 24,300 ft. 6 and 8 in. asbestos cement watermains, to Rainier Constr. Co., Renton, **$77,001.** Est. $79,709. CD 2/16.

Wash., Seattle—City, County—City Bldg., watermains in Lucile, Orcas Sts., and California Ave. etc., to Argentiere & Colarossi, 1815 Jackson St., Seattle, **$130,107.** Bids 3/1.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Pa., Phila.—B.A. 3/20—Dpt. P. Wks., City Hall Annex, intercepting sewer, Willis to Grant Aves. Approx. $500,000. A Zane Hoffman, c/o owner, ch. engr. CD 7/1/46.

Tex., Pasadena—Bids Asked—George W. Batten Co., 1620 Mo St., Houston, sanitary sewers, Berkshire Village, southeast sect of city, $75,000. CD 3/2; storm sewers same location, $60,000.

Tex., San Antonio—Bids Asked—Lee & Orts, Gunter Bldg., sanitary and storm sewers between S. Flores St., and Pleasanton Rd. $60,000.

Tex., San Antonio—Bids Asked—E. J. Burke & Sons, 4220 S. Zarzamora St., sanitary sewers. $50,000. W. W. Vander Heck, c/o owner, engr.

LOW BIDDERS

Calif., Fresno—City, City Hall, Mar. 2, storm water sewer in portion U. S. Hy. 99, from Stockton Constr. Co., Box 2087 Stockton, **$55,908.** CD 4/23/47.

Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan St., Mar. 2, South Side Intercepting Sewer, Contr. 5 and Racine Ave. Pumping Station Div. K combined, from Santucci Constr. Co., Skokie, **$567,498*****Southwest sewage treatment works alterations to dust precipitators and misc. work, Contr. 49-29, from Independent Boiler & Tank Co., 1249 N. Clark St., **$629,963*****furnishing, installing air filters, duct work, West-Southwest Sewage Treatment Works. Contr. 49-30, from Zack Co., 4610 W. 12 Pl., Cicero, **$138,846.** CD 2/1.

Ill., Freeport—City, City Hall, storm sewers, from Santucci Constr. Co., 4044 Carol St., Skokie, **$990,000.** Consoer Townsend & Assoc., 351 E. Ohio St., Chicago, Zone 11, engrs.

Ill., Marion—City, City Hall, sewerage sys., treatment works, from R. W. Ford, 704 S. Market St., **$87,170** and **$220,952** respectively. W. W. Miller, City Hall, city engr. Consoer Townsend & Assoc., 351 E. Ohio St., Chicago, Zone 11, engrs.

▲ **N. Y., New York**—Dpt. P. Wks., Municipal Bldg., Zone 7, Mar. 7, Hunts Point Sewage Treatment Works, Contr. 3A, Hunts Point intercepting sewers, from Tully & DiNapoli, Inc., 30-11 12 St., Long Island City, **$2,690,300;** Contr. 2A, Bronx River Siphon, an uptake and downtake shaft; and an 84 in. diam. sewer crossing under Bronx River, connecting two sects. of intercepting sewers, from Quist Constr. Co., 54 Dahlgren Pl., Brooklyn, Zone 9, **$517,610.** CD 2/9.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, Mar. 3, intercepting sewer, 70 St. from Joseph Lombardi & Sons, 1311 S. Broad St. **$717,920.** Est. $900,000. CD 2/27.

Wash., Oroville—Town, Town Hall, Mar. 3, Sched. 1, 32,300 ft. 6- to 18-in. sewers, from Stoker Constr. Co., Nyssa, Ore., **$70,336;** Sched. 2, sewage treatment plant and lift station, from G. R. Frix, Oroville, **$111,739,** Est. $223,350. CD 2/23.

CONTRACTS AWARDED

Tex., Houston—Glenmore Forest, c/o Homer Y. Jones, Sterling Bldg., sanitary and storm sewers, north of Neuthard Rd., own forces. Approx. **$61,000.** Thomas D. Heaney, 2113 State St., engr.

Ont., Acton—Municipality, sewers, to Sparton Constr. Co., Ltd., 627 Adelaide St. W., Toronto, **$110,000.** R. F. Smith, Oakville, engr.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

March 21
Massachusetts
March 22
Louisiana
Ontario
March 24
Minnesota
March 30
California
New Jersey

March 31
Pennsylvania

April 7
Georgia &
South Carolina

April 23
New Jersey

New Jersey—B.A. 3/23—New Jersey Turnpike Auth., War Memorial Bldg., Trenton,

Hudson and Essex Counties—constr. 20 piers, one abutment and foundations for south approach and 25 piers one abutment and foundations for north approach of Passaic River Bridge structure, Contr. 14. CD 7/13, under Streets and Roads.

New Jersey—B.A. 3/28—New Jersey Turnpike Auth., War Memorial Bldg., Trenton,

Hudson Co.—Contr. 16, south abutment, twenty south approach piers, 13 north approach piers, north abutment and 2 construction road embankments one on each side of river, etc., Hackensack River near Laurel Hill, Sect. 7. CD 7/13, under Streets and Roads.

LOW BIDDERS

Massachusetts—Commonwealth of Mass., Dpt. P. Wks., Boston, Feb. 28, 2 steel stringer bridges, approaches, for Boston to Fall River Expressway, F-344 (1), Berkeley, from Dwyer Bros. of R. I., Inc., P. O. Box 187, Broadway Station, Newport, R. I., **$235,779.** CD 2/16.

Tennessee—State Hy. Dpt., Nashville, Mar. 3, bridge, approaches over Nolichucky River on State Route 107, 5 mi. east of Greenville, Greene Co., from Oman Const. Co., Acklen Park, Nashville, **$192,650;** bridge over Duck River on State Route 13, 10 mi. south of Waverly, Humphreys Co., from J. B. Michael & Co., 1021 Heywood St., Memphis, **$310,328.** CD 2/10.

† **Virginia**—Bureau Pub. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Mar. 2, rein.-con., stone bridge across Blue Ridge Parkway, on State Route 89, 0.215 mi. Proj. 1W2, near Galax, Grayson Co., from Vecellio Constr. Co., P. O. Box 1307, Roanoke, Zone 7, **$159,989.** CD 2/6.

CONTRACTS AWARDED

Pennsylvania—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, substructure 2,179 ft. Allegheny River Bridge, near Oakmont on western exten. of Pennsylvania Turnpike Sys., Allegheny Co., to Dravo Corp., Neville Island, Pittsburgh, **$914,818.** Bids 2/21. CD 2/24, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

March 22
Ontario
March 24
Minnesota

March 30
California
March 31
Pennsylvaia

† **Washington**—B. A. 3/29—U. S. Eng., 4735 E. Marginal Way Seattle, Zone 4, constr., roads, walks, parking areas bldg., water and sewer utilities, electrical distr. sys. overhead steam distr. sys., fencing and reconstr. access road for construction of Station P/44, Clallam Co. CIVENG-45-108-50-67.

† **Missouri**—B. A. 3/30—Bureau P. Rds., Dpt. Commerce, at Office Dist. Ranger, U. S. Forest Service, Fredericktown,

Perry Co.—crushed stone or crushed grav. base course 5.502 mi. State Forest Hy. Proj. 47-A (roadwork). Plans deposit $10. H. J. Spelman, div. engr.

Tex., Pasadena—Bids Asked—George W. Baten Co., 1620 Mo St., Houston, c. conc. paving streets in 125 acre sub-division. Berkshire Village southeast sect. of city $85,000. CD 3/2.

Tex., San Antonio—Bids Asked—E. J. Burke & Sons, 4220 S. Zarzamora St., construct new streets and asph. paving, Coliseum Park area. $60,000. W. W. Vander Heck, c/o owner, engr.

Tex., San Antonio—Bids Asked—Lee & Orts, Gunter Bldg., street constr. and paving between S. Flores St. and Pleasanton Rd. $65,000.

LOW BIDDERS

Massachusetts—Commonwealth of Mass., Dpt. P. Wks., 100 Nashus St., Boston, rejected bids Feb. 7, state hy. and bridge constr. Federal Aided Proj. F-256 (9), Sutton, Northbridge, Douglas and Uxbridge, LB **$778,852.** New bid date Mar. 14, Approx. $650,000. CD 2/14, under LB.

Minn., Willmar—City, E. Brogen, clk., Feb. 27, 13,381 cu. yd. grading, 84,168 sq. yd. 3 in. aggregate base, and 1½ in. bit. surf. (hot mix) from H. Schultz Constr. Co., Carthage, S. D., **$57,966.**

Nebraska—State Dpt. Roads & Irrigation, Lincoln, Feb. 24, grading, bridge, armor coat, bit. sand, S-80, and grading, culverts, armor coat, bit. sand, S-80, both Thedford south, Thomas Co., from Ray Millis, 736 Keeline Bldg., Omaha, **$126,974** and **$173,597** respectively. CD 2/13.

New Hampshire—State Hy. Dpt., Concord, Mar. 2, grading, drainage, hot b. conc. pavement 1.048 mi. U. S. Route 3, village of Woodstock, Proj. No. F 209 (8) from William E. Dailey, North Bennington, Vt., **$177,281.** CD 8/25/44.

▲ **New Jersey**—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Mar. 7, Contr. 13, furnishing, placing, compacting various graded borrow excav. materials in embankments, stabilizing ground by use of vertical sand drains, excav. portion embankment placed overload and depositing materials so excavated on embankments, excav. ditches for mosquito control, etc. on connection with constr. New Jersey Turnpike from Linden-Elizabeth City line to Third Ave., Elizabeth, Union Co., from The Napp-Grecco Co., 241 Riverside Ave., Newark, **$1,328,096.** CD 2/27.

▲ **New Jersey**—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Mar. 8, Contr. 10, grading, drainage, drainage structures, etc. in connection with constr. 6.1 mi. New Jersey Turnpike Sect. 5, Sta. 11 plus 20 to Sta 335 plus 67 from Raritan River to vicinity Main St., Woodbridge, Middlesex Co., from The Villa Contg Co., Inc., 233 North Ave. W., Westfield, **$1,776,420.** CD 2/27.

Pennsylvania—State Hy. Dpt., Harrisburg, Mar. 3, crushed stone base with bit. surf. 24 ft., 25 ft., 30 ft. and 33 ft. in width, and bit. surf. existing pavement and variable width plain c. conc. base wid'n. 24 ft., 26 ft., 30 ft. and 33 ft. and variable in width, 12,109 ft. L. R. 580 (1), Spur E; L. R. 23065 (1), between Clifton Heights Boro and Marple, from Delaware Co. from Union Paving Co., 1227 N. Broad St., Phila. Zone 22, **$159,756*****wid'n. pavement with crushed aggregate base 6 ft. and variable in width, build up existing pavement crushed aggregate base 16 ft. and variable in width, bit. surf. new base wid'n. and build up 22 ft. in width and construct crushed aggregate base and bit. surf. 22 ft. wide incl. one rein.-con structure and one metal plate pipe structure, incl. constructing 4 rein.-con. bridges 24,060 ft. L. R. 88 (6R). T. R. 8 between Erie and Wattsburg Boro Erie Co., from Penoyer Contg. Co. Inc., Bigler, **$343,908*****wid'n. pavement with granulated slag base 3 ft. and variable in width; bit surf. new base and existing pavement 20 ft. and variable in width and surf. existing pavement 20 ft. in width, 36,825 ft. L. R. 80 (1R). T. R1 158, from point 1¼ mi. south of Mercer to Mercer-Lawrence Co. line, Mercer Co., from The Kelley & Meyer Co. Inc., 1211 Gibson St., Youngstown, O., **$144,252.** CD 2/14.

South Dakota—State Hy. Comn., Pierre, Feb. 14, base course and bit. surf., 4.991 mi. Proj. S 338 (2), Turner Co., from J. L. Healy Constr. Co., 301 Western Surety Bldg., Sioux Falls, **$54,591.** CD 2/1.

▲ **Tennessee**—State Hy. Dpt., Nashville, Mar. 3, from Gamble Constr. Co., Lee Hy., Chattanooga, wid'n., bituminous materials resurf. St. Route 1 from west limit to east limit of Rockwood, 2.2 mi.; of Route 1, from Crossville to Roane Co. line, 18.9 mi.; of Route 1 from Cumberland Co. line to Rockwood and section of State Route 29, from Route 1, south of Rockwood, to White Creek at Roane-Rhea Co. line 7.7 mi., Roane and Cumberland Counties, **$533,382;** from Bullard Paving Co. Greenville, bit. surf. on experiment station road (caps) from State Route 70 via Minks School, to approx. 5 mi. south of Greenville, 6.3 mi. Greene Co., **$52,231*****from Wesco Paving Co., Volunteer Bldg., Chattanooga, wid'n., bituminous materials resurf. 8 mi. State Route 24 from intersection with Proj. FA-229-C-(2), near Cookeville to near Baxter, Putnam Co., **$147,234***** from J. B. Michael & Co., 1021 Heywood St. Memphis, c. conc. incl. 2 bridges, 1.4 mi. relocated sect. State Route 1 in Murfreesboro, Rutherford Co., **$547,737;** crushed stone surf. incl. bridge relocated section of Secondary 6171, from State Route 13 1.4 mi. toward Bakerville, Humphreys Co., **$148,024;** gravel base with bit. road mix surf. and seal coat 5.1 mi. Secondary Rd. from junction of State Route 104 north of Shiloh Church to St. Route 76 at Atwood, Carroll Co., **$76,220*****wid'n. bit. materials resurf. 12.9 mi. St. Route 5 from Selmer to Chester Co. line, McNairy Co., **$219,096*****from Weymouth Const. Co., 2174 Person Ave., Memphis, concrete sidewalks, curb, gutters and storm sewers 1.1 mi. on east side of present pavement from due West lane to Old Hickory Blvd. and west side from Stratton School to Old Hickory Blvd. on State Route 6, Davidson Co., **$84,138*****from Pullen & Owens, 3rd Natl. Bank Bldg., Nashville, crushed stone surf., 11.5 mi., sect. of Secondary 6194 from State Route 13 at McGlamery Stand to near Bear Creek at Lutts, Wayne Co., **$116,270;** crushed stone surf. 6.2 mi. Secondary No. 4244, from Algood eastward toward Monterery, Putnam Co., **$71,625*****from Ralph Rogers & Co., Inc., 720 Argyle Ave., Nashville, wid'n., bituminous materials resurf. and wid'n. bridge across Turners Creek 9.3 mi. State Route 1, from Davidson Co. line, Cheatham Co., **$228,347;** wid'n. resurf. pavement with bituminous materials, construct 2 bridges, 10.9 mi. State Route 2, from Brewer Creek to Manchester and Manchester to Hillsboro Coffee Co., **$431,264*****from Sumers-Taylor Const. Co., Johnson City, crushed stone base and bitumirous seal coat 6.3 mi. sect. Secondary No. 2402 from State Route 1, 6 mi. east of Kingston, northeastward to Roane-Loudon Co. line, Roane Co., **$55,923;** crushed stone surf. incl. 4 bridges 5.3 mi. Secondary No. 2374, from end of Project S2374-(1) to North Carolina Line, Johnson Co., **$71,828*****from W. L. Hailey & Co., 314, 42 Ave. N. Nashville, grading, drainage, incl. 3 bridges of relocated section of State Route 11, 2.2 mi. from south limits of Springfield to 1 mi. north of city, Robertson Co., **$268,978*****from Warren Bros., Roads Co., Cowan Alley, Nashville, wid'n., bituminous materials resurf. 7.6 mi. State Route 1, from four lane pavement opposite Berry Field Rutherford Co. line. Davidson Co., **$156,000.** Received no bids Mar. 3, grading, drainage, surf., Secondary Road 8072 from Mount Carmel to concrete pavement in Covington, Tipton Co. CD 2/10.

Wisconsin—State Hy. Comn., Madison, Mar. 3, c. conc. 3.368 mi. The S. T. H. 20-North Co. Line (East Roadway) Rd., S. Hy. 20-Four Mile Rd. Sect. Proj. T 02-1 (8), U. S. Hy. 41, Racine Co., from R. R. Birdsal & Sons Co., 1025 12 St., Racine, **$139,850*****c. conc., 3.731 mi. The S. T. H. 20-North Co. Line (East Roadway) Rd., Four Mile Rd.-North Co. Line Sect., Proj. T 02-1 (8), U. S. Hy. 41, Contr. 2, Racine Co., from James Cape & Sons Co., 468 Water St., Racine, **$161,850*****b. conc. 7.099 mi. The S. T. Hy. 20-North Co. Line (East Roadway) Rd., Proj. T 02-1 (8), U. S. Hy. 41, Contr. 3, Racine Co., from Payne & Dolan of Wisconsin, Inc., 735 N. Water St., Milwaukee, **$208,565.** Cancelled bids to have been opened Mar. 3, c. conc. 8.474 mi. The La Crosse-Calvert Rd. and La Crosse-Coon Valley Rd., Projs. F 08-3 (24) and F 02-2 (16) U. S. Hys. 14 and 61 and S. T. Hy. 35, La Crosse Co.; c. conc. The North Co. Line-Westby Rd., Proj. F 08-2 (14) U. S. Hys. 14 and 61, Contr. 1. Vernon Co. CD 2/15.

CONTRACTS AWARDED

Arizona—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix, aggregate base, bit. 4½ mi. Ehrenberg-Wickenburg Hy., Yuma Co., to Tanner Constr. Co., 731 N. 19 Ave., Phoenix, **$63,000.** Awarded 3/1.

▲ **Arkansas**—State Hy. Dpt., Little Rock, c. conc. 3.24 mi. Hy. 64, Gleason, Conway Co., and surf. 2.89 mi. Third St. part of U. S. Hy. 70, North Little Rock, Pulaski Co., to Ben M. Hogan, 1120 Fairview St., Little Rock, **$190,750** and **$77,751** respectively***surf. 6.866 mi. Hy. 23, Eureka Springs, Carroll Co., to Reynolds & Williams, Tyler, Tex., **$102,667*****road work 8.929 mi. Marion-St. Francis Levee Rd., U. S. Hy. 61, Marion, Crittenden Co., to J. B. Michael & Co., 1021 Heywood St., Memphis, Tenn., **$785,315*****road work and bridges on Hy. 82, Magnolia, Columbia Co., to S. E. Evans Constr. Co., 2914 North 0 St., Ft. Smith, **$301,796*****road work 10.9 mi. Hy. 67 Fulton, Hempstead Co., to D. F. Jones Constr. Co., Box 1365, Little Rock, **$284,954*****road work, surf. 4.489 mi. Hy. 68, Huntsville, Madison Co., to Southeast Constr. Co. Ind., 127½ Main St., Pine Bluff, **$110,295*****road work 1.822 mi. Hy. 20, Helena, Phillips Co., to Weymouth Constr Co., 2174 Person Ave., Memphis, Tenn., **$252,316.** Grand total, $2,105,844. Bids 3/3. CD 2/24.

Delaware—State Hy. Dpt., Dover, 6 ft. wid'n. resurf. 112.172 mi. Laurel to Mission, Contr. 1001, Sussex Co., to Standard Bithulithic Co., foot of Brill St., Newark, N. J., **$571,635.** Bids 2/8, awarded 2/13. CD 2/15, under LB.

Iowa—State Hy. Comn., maintenance bit. resurf. 129.71 mi., MS-13, Div. 1, to Iowa Road Bldg. Co., Fairmont, Minn., **$116,498**; Div. 2, to Cameron, Joyce & Co., Keokuk, **$102,971**, Bids 2/28, awarded 3/1.

Mississippi—State Hy. Comn., Walter Spiva, dir., Jackson, grav. culverts, bridges, 6.495 mi. State Hy. 32 between Oakland and Water Valley, Proj. 32-1523 (1) (Enid Dam), Yalobusha Co., to Blount Bros. Constr. Co., Box 270, Tuskegee, Ala., **$252,708**, Est. $335,000. Bids 2/28. CD 2/13.

Missouri—State Hy. Comn., Jefferson City, wid'n., 24 ft. b. conc. paving 4.979 mi., Rte. 61, road from Sikeston to New Madrid, Proj. 15(2) A, New Madrid Co. to Mid American Eng. Corp., Skokie, Ill., **$130,999.** Bids 2/3, awarded 2/24. CD 1/18.

New Jersey—New Jersey Turnpike Auth., Trenton, Contr. 9, grading, drainage structures between Allentown and Raritan River, Mercer and Middlesex Counties, to Grandview Co., 6 Grandview Ave., Mt. Vernon, N. Y., **$2,716,065.** Bids 2/23, awarded 3/1. CD 3/2, under Bridges.

New Mexico—State Hy. Dpt., Santa Fe, stabil. surf. course and misc. 14.797 mi. S. R. Nos. 277 and 311 between Field and Clovis, FAP No. S-138 (2), Curry Co., to Jack Adams, 1116 S. 5 St., Tucumcari, **$103,795*****levelling course, ballast, asph. processed base and misc. 9.466 mi. S. R. 137 between Carlsbad and El Paso Gap FAP No. S-147 (1), Eddy Co., asph. processed base, bit. top course surf. and misc. 5.871 mi S. R. 235 between Rogers and Texas-New Mexico line, FAP No. S-89 (1), Roosevelt Co., to Armstrong & Armstrong, Box 873, Roswell, **$151,251** and **$73,451** respectively***asph. processed base, bit. top course surf. and misc. 8.107 mi. S. R. 312 between McAlister and New Mexico S. R. 88, FAP No. S-140 (1), Quay and Curry Counties, to D. D. Skousen, 201 Springer Bldg., Albuquerque, **$104,099*****grading, one concrete and steel bridge 204.62 ft. long, asph. processed base, bit. top course surf. and misc. in city of Las Vegas, town of Las Vegas and between Watrous and Las Vegas on U. S. 85 and alternate U. S. 85, FAP Nos. UI-78 (7), FI-78 (8) and U-188 (2), San Miguel Co., to Floyd Haake, 1201 Sierra Vista St., Santa Fe, **$235,270*****grading, one multiple concrete box culvert 35.71 ft. long, asph. processed base, bit. top course surf. and misc. 12.818 mi. U. S. 54 between Santa Rosa and Vaughn, FAP No. F-170 (2), Guadalupe Co., to G. I. Martin, 520 S. Tulane St., Albuquerque, **$299,277.** Grand total $967,143. Bids 2/28. CD 2/20.

North Dakota—State Hy. Dpt., Bismarck, grav. surf., etc., 26.801 mi. State Hys. 32 and 46 from Oriska to near Enderlin, FASP No. S-221 (3) and S-374 (3), Barnes, Ransom and Cass Counties, to LaVoy & Scheffler, Fargo, **$65,813.** CD 2/16.

▲ **Ohio**—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15, Type T-35 and structure, concrete slab bridge with concrete substructure, S. R. 169, Trumbull Co. and Type T-32 on B-11, S. R. 76, Washington Co., to The Ross Constr. Co., 313 Hartman Bldg., Columbus, **$50,688**, est. $51,500 and **$120,963**, est. $173,300***respectively Type T-35 and structure 3 span concrete slab bridge, S. R. 3, Knox Co., to Menuez & Skemp, Millersburg, **$53,577*****Type T-35, S. R. 14, Summit Co., to The McCourt Constr. Co., 720 Home Ave., Akron, **$102,112**, est. $116,600***Type T-32 and structure, 3 span continuous steel beam bridge with concrete deck and substructure, S. R. 131, Brown Co., to The Kent Bros. Co., 22 E. Gay St., Columbus, **$55,777*****Type T-35 on B-20, U. S. R. 24, Lucas Co., to S. E. Johnson Co., P. O. Box 29, Maumee, **$617,473**, est. $791,800***Type T-34 on B-20 and structure, 3 span continuous concrete slab bridge with capped-pile piers and abutments, S. R. 73, Highland Co., to John R. Jurgenson, Box 254, Newtown, **$126,929**, est. $168,100***Type T-34 on B-20, grading, drainage structures and bit. premixed surf. course on waterbound macad. paving C. R. No. 36, Fulton Co., to C. E. Edgington & Son, 1220 S. Main St., Findlay, **$62,251**, est. $80,200*** Type T-35, grading, drainage structures, wid'n. with waterbound macad. and b. conc. paving, U. S. Rd. 42, Delaware Co., to A. W. Burns Constr. Co., 424 Woodland Ave., Columbus, **$156,573**, est. $203,900. Grand total $1,356,343. Bids 2/7. CD 1/26.

Tex. Griffing Park (Port Arthur P. O.)—City and Jefferson Co., Griffing Park, road work, sand shell 7 in. base, ¾ in. asph. top, to Stevens & Co., Port Arthur, **$371,000.** Smith & Norris, Harris Bldg., Port Arthur, engrs.

Tex., Houston—Glenmore Forest, c/o Homer Y. Jones, Sterling Bldg., asph. paving north of Neuthard Rd., own forces. Approx. **$56,000.** Thomas D. Heaney, 2113 State St., engr.

Tex., Houston—Harris Co., Courthouse, approx. 6½ mi. asph. paving Lockwood Dr., Wesleyan Rd., Buffalo Speedway, San Felipe Rd., own forces. **$68,000.** Hugo Zapp, co. engr. CD 8/28/47.

Tex., Pittsburg—Camp Co., Courthouse, farm-to-market road own forces. Approx. **$55,000.** CD 9/2.

Washington—State Hy. Dpt., Olympia, grading, draining, surf. 12.29 mi. Primary State Hy. 8 north of Plymouth, Betnon Co., to Roy L. Bair & Co., 1220 Ide St., Spokane, **$153,853**; grading, draining, surf. 11.9 mi. Primary State Hy. 9 south of Kennewick, Benton Co., to C & E Constr. Co., Yakima, **$163,877.** Bids 2/28. CD 2/16.

▲ **Newfoundland**—Dpt. P. Wks., Court House, St. Johns, road const. on trans-provincial hy. 31 mi. between Glenwood and Bishop Falls, to Concrete Products (Nfl'd.) Ltd., Mt. Pearl, St. John's Approx. **$1,085,000.** CD 9/2.

EARTHWORK, WATERWAYS

BIDS ASKED

† **Connecticut**—B.A. 3/21—U. S. Eng., New England Div., Army Base, Boston, 10, Mass., Mianus River dredging, CIVENG 19-016-50-45, C. E. Adams, Jr., div. engr. CD 6/9/44.

† **Massachusetts**—B.A. 3/21—U. S. Eng., New England Div., Army Base, Boston, Zone 10, constr. stop log storage structures, Holyoke, CIVENG 19-016-50-31.

† **Ohio**—B.A. 3/21—U. S. Eng., P. O. Box 2127, Huntington 18, W. Va., raising levee, levee protection works, Magnolia, Bolivar Reservoir Proj., Serial No. CIVENG-46-022-50-83.

† **North Carolina**—B.A. 3/22—U. S. Eng., 308 Customhouse, Wilmington, dredging Stumpy Point Bay, Serial No. CIVENG 31-075-50-28.

† **Virginia**—B.A. 3/22—U. S. Eng., foot of Front St., Norfolk, emergency removal of shoal at entrance to Jones Creek, Pagan River, Serial No. CIVENG-44-110-50-65

B. C., **New Westminister**—B.A. 3/22—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., protection work at Tiblury Island, Fraser River. Approx. $60,000. Plans deposit $20. R. Blais, c/o owner, engr. CD 10/4.

† **Colorado**—B.A. 3/23—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, furnishing, del. f.o.b. cars shipping point or f.o.b. cars Wild's Spur (Loveland) and Bellevue, 100,000 bbl. portland cement in bulk or in paper sacks for constr. Olympus and Pole Hill Tunnels and Olympus siphon, Estes Park-Foothills power aqueduct and approx. 20,000 bbl. portland cement in bulk or in paper sacks for constr. Poudre Supply Canal, Colorado-Big Thompson Proj., Spec. 2936. L. N. McClellan, ch. engr.

† **Florida**—B.A. About 3/23—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala., constr. east bank access road from Jim Woodruff Dam, Apalachicola River, near Chattahoochee, Fla., site is in Gadsden Co., Fla. and Decatur Co., Ga., CIVENG-01-076-50-44. CD 11/24/43.

† **Massachusetts**—B.A. 3/23—U. S. Eng., Army Base, Boston Zone 10, dredging Fall River Harbor, Bristol Co., CIVENG-10-016-50-37. Extended date. CD 2/9.

† **Washington**—B.A. 3/23—Bureau Reclamation, Dpt. Interior, 204 N. 4 St., Yakima, drilling water supply wells at Roza Pumping Plans No. 3, 9, 15, 17 and Mile 72.9, Spec. R1-74.

† **Arkansas**—B.A. About 3/24—U. S. Eng., 300 Broadway, Little Rock, powerhouse and switchyard, Bull Shoals Dam Power Development, CIVENG-03-500-50-41. Extended date. CD 2/14.

† **Arkansas**—B.A. 3/24—U. S. Eng., 300 Broadway, Little Rock, excavate pilot channel on left bank Arkansas River at Hensley bar, 1,600,000 cu. yd., Hensley, Jefferson Co., CIVENG-03-050-50-66.

† **Oregon**—B.A. 3/23—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., surf. levee along Walla Walla River, Station 183 plus 00 to 275 plus 00 (Section 2 and 3), Milton-Freewater Proj. in vicinity of Milton and Freewater, Umatilla Co., Serial No. CIVENG-45-164-50-100.

Tex., Pasadena—Bids Asked—George W. Batten Co., 1620 Mo St., Houston, earthwork, gas lines, Berkshire Village, southeast sect. of city. $60,000.

Tex., San Antonio—Bids Asked—E. J. Burke & Sons, 4220 S. Zarzamora St., earthwork, clearing and grubbing, in Coliseum Park area for Negroes project. $40,000. W. W. Vander Heck, c/o owner, engr.

LOW BIDDERS

Alabama—State Dpt. Conservation, 7 N. Bainbridge St., Montgomery, Feb. 24, dredging, bulkhead and other imprvs. in vicinity of Seafood Div., Headquarters bldg., near Cedar Point, Mobile Co., from Hawkins Constr. Co., 925 Adams St., Montgomery, **$34,874.** CD 2/9.

† **Arizona**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., rejected bids Feb. 21, approx. 80,000 bbl. portland cement for Wellton-Mohawk Div., Wellton, Gila Proj., Spec. 2917. L.B. **$244,000.** Will re-advertise. CD 3/1, under LB.

† **California**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Feb. 28, fifteen traveling water screens for Friant-Kern canal distr. sys., Central Valley Proj., Spec. 2986, from Link-Belt Co., 400 Paul Ave., San Francisco, **$91,690.**

† **California**—U. S. Eng., Wright Bldg., Sacramento, Feb. 28, administration bldg., warehouse, garage, water distr. sys., sewerage sys., electric distr. sys., roads, parking areas, sidewalks and flagpole, at Folsom Dam Proj., Sacramento Co. Spec. 04-157-50-51, from Wm. E. Frye Constr. Co., 200-J Alta Vista Ave., Grass Valley. **$92,783.** CD 2/15.

† **California**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A Denver Federal Center, Denver, Colo., Feb. 21, 205,670 lin. ft. rein.-con. pipe for 25 to 50 ft. heads from 12- to 72-in. inclusive for Ivanhoe Irrigation Dist., Lindmore Irrigation Dist., Unit 3, and Southern San Joaquin Municipal Utility Dist., Unit 3, Friant-Kern Canal Distribution System, Central Valley Proj., Spec. 2908, from Central Valley Concrete Pipe Co., Stockton, **$768,077.** CD 2/7.

† **Illinois and Missouri**—U. S. Eng., 808 U. S. Court House & Custom House, 1114 Market St., St. Louis 1, Mo., Mar. 1, constr. 26,750 lin. ft. earthen levees in Perry County Levee Dists. 1, 2 and 3, Perry Co., Mo., and Randolph Co., Ill., Proj. Items III-A, III-B and III-C, Inv. CIVENG-23-065-50-73, from Luhr Brothers, Inc., Columbia, **$626,031.** Est. $687,195.

† **Illinois**—U. S. Eng., 808 U. S. Court & Custom House, St. Louis 1, Mo., Mar. 1, constr. Chouteau, Nameoki and Venice Pumping Station, Chouteau, Nameoki and Venice Drainage and Levee Dist. Proj. Item 1, Madison Co., on east side of Chain of Rocks Diversion Canal opposite Station 272, plus 00 about 2 mi. east of Chain of Rocks Toll Bridge over Mississippi River Mile 191 above mouth of Ohio River, CIVENG-23-065-50-77, from J. S. Alberici Constr. Co., 1550 Irving Ave., St. Louis 20, Mo. **$114,041.** Est. $110,224. CD 2/16.

† **Iowa**—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul, Minn., Feb. 23, upper approach channel dredging, Lock and Dam 10, Mississippi River, Guttenberg, from Grant Contg. Co., 112½ W. 4 St., Greenville, O., **$72,240.** CD 1/30.

† **Maine**—U. S. Eng., New England Div., Army Base, Boston, Zone 10, Mar. 1, dredging Cape Porpoise Harbor, Kennebunkport, CIVENG 9-016-50-42, from Heling Dredging Corp., 166 North Wellwood Ave., Lindenhurst, N. Y., **$66,750.** CD 2/8.

† **Massachusetts**—U. S. Eng., New England Div., Army Base, Boston, Zone 10, Mar. 2, dredging Boston Harbor, Suffolk Co., CIVENG 19-016-50-36, from Great Lakes Dredge & Dock Co. 17 Battery Pl., New York, N. Y., **$46,900.** CD 1/12.

† **Missouri**—U. S. Eng., 1709 Jackson St., Omaha, Neb., Feb. 28, Agricultural Levee Unit L 550, Sects. to 9 (inclusive) along bank of Missouri River, from mouth of Nishnabotna River to Brownville Bridge, near Phelps City, Atchison Co., CIVENG-25-066-50-23, from Charles Hulme Co., Great Bend, Kan., **$373,075**, Est. $506,851. CD 2/3

† **Nebraska**—Bureau Reclamation, Dpt. Interior, Superior, Feb. 28, earthwork, structures for Superior Canal, Station 1083 plus 00 to end Station 1628 plus 09.75 and drains, channel changes and terminal Wasteway, Missouri River Basin Proj., Bostwick Div., Spec. 2895, from Dobson Bros. Constr. Co., 809 1st Natl. Bank Bldg., Lincoln, **$182,681.** Est. $227,124. CD 2/14.

New Jersey—State Hy. Dpt., Trenton, Mar. 2, channel dredging in Manasquan River, Brielle and Point Pleasant, Monmouth and Ocean Counties, from J. A. LaPorte, Arlington, Va., **$70,120**; channel dredging in vicinity New State Hy. Rte. 37 Bridge, Barnegat Bay, Dover Twp., Ocean Co., from Hill Dredging Corp., 5601 Atlantic Ave., Ventnor, **$88,701.** CD 2/10

N. J., Ocean City—Dpt. Conservation & Economic Div., 1060 Broad St., Newark, jetty north end of Island, from Jesse A. Howland, 50 Church St., Sea Bright. **$344,506.** William H. Collison, Jr., 801 Asbury Ave., engr.

† **Oklahoma**—U. S. Eng., Box 61, Tulsa, Feb. 24, clearing reservoir site at Tenkiller Ferry Dam on Illinois River, from Pennington-Winter Co., Apco Tower, Oklahoma City, Zone 2, **$698,360**. Est. $750,000. CD 2/2.

▲† **Tennessee, Missouri, Arkansas**—U. S. Eng., P. O. Box 97, Memphis, 1, Tenn., Feb., 23, casting articulated concrete mattress units, Cates Landing, Tenn., 120 squares and 126,000 bbl. Portland cement; Caruthersville, Mo., 32,000 squares and 33,600 bbl. Portland cement; Richardson Landing, Tenn., 128,600 squares and 135,000 bbl. Portland cement or alternate, 103,000 bbl. Portland cement and 32,000 bbl. natural cement; Helena, Ark., 80,000 squares and 84,000 bbl. Portland cement, Serial No. CIVENG-40-041-50-107, from McAlister Constr. Co., 833 State St., Pine Bluff, Ark., **$1,642,830**. Est. $1,572,998. CD 2/16.

† **Texas**—U. S. Eng., 606 Santa Fe Bldg., Galveston, Feb. 28, dredging Houston Ship Channel between Morgans Point to vicinity of Red Fish Reef, Chambers Co., Inv. No. CIVENG-41-243-50-166, from Bauer-Smith Dredging Co., Port Arthur. **$530,700**. Est. $850,000.

† **Texas**—U. S. Eng., 606 Santa Fe Bldg., Galveston, Mar. 1, dredging tributary channel between Intracoastal Waterway to Harlingen, Serial No. 41-243-50-114, from Bauer-Smith Dredging Co., Port Lavaca. **$666,168**. CD 2/7.

† **Texas**—U. S. Eng., 606 Santa Fe Bldg., Galveston, Mar. 1, dredging Gulf Intracoastal Waterway from Port Isabel to Mud Flats, Cameron, Willacy and Kennedy Counties, Inv. No. CIVENG-41-243-50-144, from Bauer-Smith Dredging Co., Port Lavaca. **$126,202**. Est. $240,000. CD 2/20.

CONTRACTS AWARDED

† **Arkansas**—U. S. Eng., 300 Broadway, Little Rock, furnishing Lots 7 and 8, of Portland cement to Bull Shoals site, to Louisville Cement Co., 315 Guthrie St., Louisville, Ky., **$771,980**.

† **Idaho**—Bureau Reclamation, Dpt. Interior, Caldwell, constr. Conway Gulch drain, Schedule 2, to Henry L. Horn, Caldwell, **$26,321**; constr. Hartley Gulch drain, Schedule 1, to Joe Holcomb, Weiser, **$45,319**, both Boise Proj., Payette Div., Spec. R1-68 (Regional). Bids 2/14. CD 1/30.

Ia., Des Moines—State Conservation Comn., 914 Grand St., earth dam, Geode State Park, to Dusenberg Co., Clear Lake, **$265,768**. Bids 2/23. Stanley Eng. Co., Hershey Bldg., Muscatine, engr. CD 12/19.

† **Ohio**—U. S. Eng., Madison Ave. and 8 St. W., Huntington, Zone 18, W. Va., pump. stations, Massillon, CIVENG-46-022-50-60, to Wright Constr. Co., Williamston, Mich., **$503,479**. Bids 1/27, awarded 2/13. CD 1/20.

† **Oregon**—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., construct channel and levee along Walla Walla River, Milton-Freewater project in vicinity of Milton, Umatilla Co., CIVENG-45-164-50-85, to J. S. Anderson Co., E. 1723 Mission St., Spokane, Wash., and Morrison & Fisher, Walla Walla, Wash. **$243,297**. Est. $290,536. Bids 3/1. Awarded 3/1.

Tex., Abilene—City, ditching for water diversion, force account. Approx. **$60,000**. Freese & Nichols, 407 Danciger Bldg., Fort Worth, engrs.

AIRPORTS

BIDS ASKED

Newfoundland, Torbay—CLEARING, etc.&B.A. 3/20—Ft. Collins, Dpt. Transport, Ottawa, Ont., clearing, stumping, grading, graveling and drainage at airport. Plans deposit $10.

S. D., Aberdeen—AIRPORT—B. A. 3/22—City, airport work. $116,005. Scott Eng. Co., Watertown, engr.

† **Mich., Selfridge Air Force Base**—GROUND CONTROL APPROACH UNIT—B. A. On Or About 3/23—U. S. Eng., 520 Merchandise Mart, Chicago, 54, Ill., ground control approach sys. unit, Selfridge Air Force Base, Mt. Clemens, CIVENG 11-032-50-8.

† **Ill., Quincy**—LANDING SYSTEM—B.A. 3/23—Civil Aeronautics Admin., City Hall, Kansas City, Mo., instrument landing system at Municipal Airport.

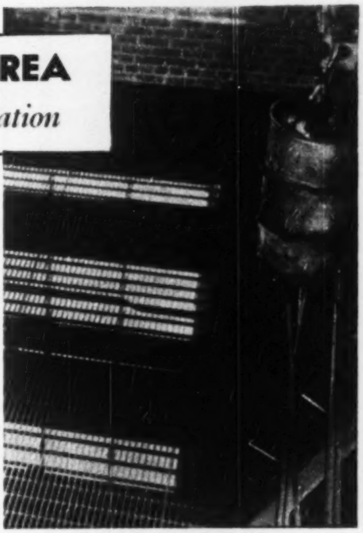
Mass., New Bedford—AIRPORT IMPRVS—B.A. 3/23—City, E. V. Lahey, chn. New Bedford Airport Comn., Admin. Bldg., Municipal Airport, airport imprvs., incl. high intensity lighting for hangars, runways, aprons, etc., New Bedford Municipal Airport. $50,000. Plans deposit $15. Fay Spofford & Thorndike, 11 Beacon St., Boston, engrs. CD 11/16.

Minn., Minneapolis—AIRPORT IMPRVS.—B. A. 3/23—Metropolitan Airports Comn., 2429 University Ave., St. Paul, constr. work Wold-Chamberlain Field, incl. Schedule V, 1,450 lin. ft. 12- to 24-in storm sewer lines, 11 manholes, catchbasins, 235,500 sq. yd. 8- to 11-in. concrete paving, 130,000 sq. yd. b. conc., 7,000 lin. ft. concrete curb, etc.; Schedule VI, 150 high intensity lights, 21 parking lot lights, 290 lin. ft. conduit tunnel, 30 transformers, 284,000 lin. ft. electric cable and wire, 9,000 lin. ft. ducts and conduits, 36 electric manholes. Approx. $500,000. Plans deposit $15. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, engrs. CD 3/24/48.

† **N. Y., Brooklyn**—FUELING SYSTEM—B. A. 3/23—Dpt. P. Wks. Office, Third Naval Dist., 50 Church St., New York, Zone 7, fueling system alterations for 2230th A.F.R.T.C. at Naval Air Station, Floyd Bennett Field.

CONTRACTS AWARDED

Ga., Atlanta—ADMINISTRATION BLDG.—Fulton Co. administration bldg. at Fulton County Airport, to



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Concrete Builders, Inc., 774 Spring St. N. W., $114,854. Bids 3/1. CD 2/9.

† **T. H., Oahu**—SCHOOL—U. S. Eng., APO 950, c/o PM, San Francisco, Calif., school at Hickman Air Force Base, PAAFWF-50-2, to Peter Y. T. Chang, Honolulu, **$323,750. Awarded 2/14.**

PUBLIC BUILDINGS

BIDS ASKED

† **N. Y., New York**—POST OFFICE REPAIRS—B.A. 3/21—Pub. Bldgs. Service, 731 Customhouse, Zone 4, misc. repairs at U. S. Post Office, Grand Central Annex Station.

† **Va., Fort Story**—FAMILY QUARTERS—B.A. 3/21—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., converting to family quarters, Serial No. Eng-29-080-50-9-(12). CD 2/9.

▲† **Wis., Elkhorn**—UTILITY, etc.—B.A. 3/21—U. S. Eng., 72 W. North Bank Dr., Chicago, Ill., 20 utility bldgs., heating plant, water and sewerage sys., streets, etc. $1,500,000. Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., archts.

Ala., Tuscumbia—HIGH SCHOOL—B. A. 3/22—City, high school. Howard A. Griffith Jr., Sheffield, archt.

† **Mass., Brockton**—STORAGE—B. A. Or Or About 3/22—U. S. Eng., New England Div., Boston, Zone 10, 52x146 ft., motor vehicle storage bldg., for Mass. National Guard, off Montauk Rd., CIVENG-19-093-50-2.

Mass., Easthampton—HOUSING—B.A. 3/22—Town of Easthampton Housing Auth., 9 Northampton St., Easthampton, 22 single 1½ story, bsmnt., 31 unit Veterans housing. Approx. $300,000. Plans deposit $100. Warner MacNeish Service, 1597 Main St., Springfield, archts. and engrs. CD 1/27.

† **Mass., Salem**—STORAGE—B. A. On Or About 3/22—U. S. Eng., New England Div., Boston, Zone 10, 52x146 ft., motor vehicle storage bldg., for Mass. National Guard, North Pole St. and Howard St. exten. CIVENG-19-093-50-2.

Neb., Beatrice—DORMITORY—B.A. 3/22—State Bd. Control, Capitol Bldg., Lincoln, girls dormitory at Beatrice State Home. $280,000. Leo A. Daly Co., Insurance Bldg., Omaha, archt.

▲ **N. Y., Utica**—MEDICAL-SURGICAL—B.A. 3/22—Bureau Contracts & Accounts, Albany, medical-surgical bldg., at Utica State Hospital. $1,896,000. Plans deposit $30. CD 7/13/45.

N. C., Kinston—IDIOT COLONY—B.A. 3/22—At office S. H. Stroud, bus. mgr., Kinston, two one story 152x300 ft. 160-bed idiot colony bldgs., for State Hospitals, Bd. Control, Caswell Training School, Kinston. Plans deposit $30 general, $15 each for heating, plumbing, electrical work and refrigeration. Eric C. Flannagan, McCoin Bldg., Henderson, archt. W. M. Wallace, 126 E. Parrish St., Durham, engr.

Vt., Castleton—DORMITORY—B.A. 3/22—State of Vermont, Purch. Agent, State House, Montpelier, 2 story dormitory, Teachers College. $385,000. Plans deposit $50. Haecock & Platt, 150 N. 15 St., Phila., Pa., archts. CD 9/16.

B. C., West Summerland—HIGH SCHOOL—B.A. 3/22—Secretary-Treasurer, School Dist. 77, West Summerland, frame Junior Senior High School. Approx. $400,000. Plans deposit $50. W. K. Noppe, 1186 Nicola Sts., Vancouver, archt.

Ala., Oxford—SCHOOL—B. A. 3/23—Calhoun Co., Oxford, elementary and high school addn. Wilmot C. Douglas, 226 N. 14 St., Birmingham, archt. CD 2/20.

† **Colorado**—TRANSFORMERS, etc.—B.A. 3/23—Bureau Reclamation Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Brush, Colo., power transformer, lightning arresters, tap changer, circuit breakers, lifting devise, selector switches, grounding blades, disconnecting switches, horn-gap switch, disconnecting fuses for Beaver Creek substation, Colorado-Big Thompaon Proj., Spec. 2918. L. N. McClellen, ch. engr.

Conn., Falls Village—SCHOOL—B.A. 3/23—Town of Canaan Bd. Selectmen, Town Hall, Falls Village, Canaan, 2 story, brick, steel school, Falls Village, $250,000. Ebbets, Frid & Prentice, 862 Asylum St., Hartford, archts. CD 1/23.

▲ **Ill., Normal**—DORMITORY, etc.—B.A. 3/23—State of Illinois, Springfield, general contract, heating, plumbing and ventilating, electrical work and kitchen equip. for dormitory and kitchen at Illinois State Norman University, $1,000,000. CD 2/14/45.

▲ **Mass., Fall River**—HOUSING—B.A. 3/23—City of Fall River Housing Auth., 151 Sunset Hill, 2 story, 100 unit, garden apartments, Rodman St., S. A. Proj. Fall River 200-1, $1,100,000. Plans deposit $50. Edw. M. Corbett, 49 Purcase St., archt. S. T. Dubitsky, 41 N. Main St., engr.

▲ **Mass., Wellesley**—SCHOOL—B.A. 3/23—High School Constr. Comn., Wellesley, plans by Kilham, Hopkins & Greeley, 16 Arlington St., Boston, 2 story, bsmnt., brick, steel, concrete Junior High School, Kingsbury St. $1,000,000, Plans deposit $50. CD 9/26/45.

▲ **Miss., Meridian** — HOSPITAL — B.A. 3/23 — State Bldg. Comn., New Capitol Bldg., Jackson, wards to house disturbed patients, State Mental Hospital, Approx. $1,000,000. Chris Risher, Vise Clinic Bldg., archt. CD 8/8.

N. C., Charlotte—HIGH SCHOOL—B. A. 3/23—Mecklenburg Co. Bd. Educ., W. B. McClintock, chn., Courthouse, West High School. Plans deposit $25. Extended date. C. W. Connelly, Box 4111, archt. and engr. CD 2/24.

O., Middletown—SCHOOL—B.A. 3/23—City Bd. Educ., R. H. Snyder, clk., 1st Natl. Bank Bldg., 2 story, brick school, concrete bsmnt. $450,000. McLaughlin & Keil, 500 Dominion Bldg., Lima, archts. CD 12/1.

Tex., Menard—HIGH SCHOOL—B. A. 3/23—Menard Independent School Dist., c/o C. R. Brace, supt. Schools, Menard, high school. $350,000. Plans deposit $15. Extended date. Wilson & Patterson, 202 Majestic Bldg., Fort Worth, archts. CD 1/3.

Wyo., Cheyenne—SCHOOL—B. A. 3/23—Bd. Educ. School Dist. 1, 22 St. and Central Ave., 26,000 sq. ft., brick, 12 classroom Henderson Grade School, $250,000. Kellogg & Kellogg, 1909 Carey Ave., archts. and engrs. CD 2/8.

Conn., Westport—HOUSING—B.A. 3/24—Town of Westport Housing Auth., 6 Wilton Rd., 40 family units, Hale Farm, of Green Farms Rd., $350,000. Extended date. C. E. Cutler, 168 Kings Hy., archt.

Mass., Greenfield—HOSPITAL—B. A. 3/24—Franklin Co. Public Hospital, High St., hospital and nurses home. $896,000. James H. Ritchie & Assoc., 38 Newbury St., Boston, archts. CD 2/27.

N. C., Rutherfordton—HOSPITAL—B.A. 3/24—Rutherford Hospital, Dr. R. H. Crawford, vice pres. and treas. 70 beds hospital incl. walks, drives. Plans deposit $30 general; $20, plumbing, heating, ventilating, electrical work. W. W. Hok & Assocs., Inc., 303½ W. 4 St., Charlotte, archts. CD 5/26.

O., Zanesville — SCHOOL — B. A. 3/24—Bd. Educ., Zanesville, Wilson School addn. CD 11/11/48.

Okla., Blackwell—POWER PLANT IMPRVS.—B.A. 3/24—City, Blackwell, building alterations, power piping, power wiring, and switchboards for Blackwell power plant. $275,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. CD 9/1.

Conn., Middleton—HOUSING—B.A. 3/25—City Middletown Housing Auth., Louis W. Johnson, executive dir., 50 family units, Long Lane Sect. $450,000. Sebastian J. Passanesi, 164 Court St., archt. CD 1/6.

Mont., Jordan—HOSPITAL—B.A. 3/28—Garfield Co., Courthouse, 1 story, bsmnt., rein.-con., steel, brick tile, Garfield Co. Hospital, $260,000, Plans deposit $25. J. G. Link & Co., Electric Bldg., Billings, archts.

Tex., Plainview—HIGH SCHOOL—B.A. 3/28—Independent School Dist., c/o W. H. Avinger, supt. Schools, Plainview, high school, incl. gymnasium, auditorium. $850,000. Plans deposit $50. Wyatt C. Hedrick, 1005, 1st Natl. Bank Bldg., Fort Worth, archt. CD 12/2.

▲ **Tex., Wichita Falls**—HOSPITAL—B.A. 3/28—Wichita General Hospital, City and County, Wichita Falls, 4 story, bsmnt., city-county hospital. $1,300,000. Ray C. Arnhold & Jesse G. Dixon, Nacol Bldg., archts. Landauer & Guerrero, 4801 Lemon St., Dallas, engrs. CD 9/15.

▲ **Calif., Richmond**—SCHOOL—B.A. 3/30—Richmond Union High School Dist., 1108 Bissell St. 34 classroom rein.-con. Junior High School, $1,500,000. Plans deposit $50. Miller & Warnecke, Financial Center Bldg., Oakland, archts. CD 2/19/48.

▲† **N. M., Los Alamos**—HOSPITAL—B.A. 3/30—U.S. Atomic Energy Comn., Los Alamos, hospital, Inv. No. 291-50-46. $2,000,000-3,000,000. Plans deposit $50. CD 1/10.

▲ **Wash., Kennewick**—SCHOOL—Bids Asked—School Dist. 17, Kennewick, 1 story, 400x600 ft., rein.-con. school, $1,800,000. Plans deposit $25. Extended date. E. W. Morrison, 719 2 Ave. Bldg., Seattle, archt. CD 2/27.

LOW BIDDERS

Ala., Auburn — ARCHITECTURAL — Alabama Polytechnic Institute, Auburn, Feb. 28, architectural bldg., from A. C. Samford, Inc., Albany, **$435,997.** CD 1/19.

Calif., Alameda—SCHOOL—Alameda Bd. Educ., Oak St. and Alameda Ave., Feb. 28, 20 clasroom Woodstock School, from Pacific Coast Buliders, 2530 18 St., San Francisco, **$370,700.** CD 2/3.

Calif., Berkeley—SCHOOL—State Div. Architecture, P. Wks. Bldg., Sacramento, Feb. 21, general contract 1 story, 1218 sq. ft. Unit 1 and 3 story rein.-con. 54,140 sq. ft. Units 2 and 3, from Empire Constr. Co., 344 Harriett St., Oakland. **$522,000.** CD 1/30.

▲ **Calif., Sacramento** — HOSPITAL — Sacramento Co., Courthouse, Mar. 1, 4 story, 400 bed, rein.-con., stel County Hospital adn., from Lawrence Constr. Co. & Edwin J. Mackay, 3020 V St., **$1,157,813.** CD 1/25.

Del., Lewes — SCHOOL — Lewes Special School Dist., Lewes, Feb. 24, general contract school, from J. A. Bader, Inc., 916 Market St., Wilmington, **$367,150.** CD 2/2.

▲ **Fla., Tampa**—COURTHOUSE—Hillsborough Co., Mar. 3, courthouse, from Mion Constr. Co., 377 Techwood Dr., N. W., Atlanta, Ga., **$2,617,708.** CD 1/18.

Ga., Sylvania—HOSPITAL—Screven Co. Hospital Auth., Sylvania hospital, from A. B. Newton, Vidalia, **$257,600.** CD 2/8.

Ill., Elgin—SCHOOL—North Junior High School, Dundee Ave., Feb. 20, 2 story, brick, steel, concrete North Junior High School, from Wm. R. Goss Co., 435 N. Michigan St., Chicago, Zone 11, **$639,750.** CD 1/23.

Ind., South Bend—SCHOOL—Bd. School Trustees, 228 St. Joseph Ave., 2 story, bsmnt., 153x200 ft. brick, stone, rein.-con., structural steel Perley School, from S-L-A-B Constr. Co., 428 N. Michigan St., **$473,841,** Est. $600,000. CD 12/14.

Mass., Bridgewater—SCHOOL—Town, School Dpt., Feb. 24, 2 story, bsmnt., brick Junior and Senior High School, from John Hamre & Son, 55 Buckingham St., Quincy, **$789,000.** CD 2/10.

Mass., Natick — HOUSING — Town of Natick Housing Auth., 12 Main St., Natick, Mar. 1, 52 unit veterans housing, Forest Ave., Curve and High Sts., Proj. 200-1, from Jefferson Constr. Co., 75 First St., Cambridge, **$452,198.** CD 2/10.

Minn., Rochester—POWER PLANT IMPRVS.—State Dpt. Admin., P. Y. Peterson, dir. Purchases, 19 State Capitol, St. Paul, Feb. 28, furnish, install electrical equipment, power plant, Proj. 958, State Hospital from Southwest Electric Co., 611 West 5 St., P. O. Box 588, Amarillo, Tex., **$77,980.** CD 2/1.

N. Y., Alfred—CLASSROOM, etc.—Bureau Contracts & Accouts, Albany, Mar. 1, classroom and laboratory, etc. at New York State College of Ceramics, Alfred University, from F. D. Rich Co., 101 Park Ave., New York, Zone 17, **$697,743.** CD 2/23.

▲ **N. Y., Beacon**—HOSPITAL, etc.—Bureau Contracts & Accounts, Albany, Mar. 1, hospital bldgs. addns. alterations, Matteawan State Hospital, from Gens-Jarboe, Inc., 101 Park Ave., New York, Zone 17, **$1,176,745.** CD 2/6.

N. Y., Syracuse—STABLE REPAIRS—Bureau Contracts & Accounts, Albany, Mar. 1, roof repairs to Stable Bldg. 18, at State Fair Grounds, from H. Goodman & Sons, Inc., 200 Varick St., New York, Zone 14, **$95,820.**

† **Ohio**—STORAGE GARAGES—U. S. Property & Disbursing Officer for Ohio, Bldg. 101, Fort Hayes, Columbus, Zone 18, Feb. 17, storage garages for Ohio National Guard at Hillsboro, Mt. Vernon, Urbana, Paulding, Greenville, Youngstown and Willoughby, from George W. Timmons Const. Co., 1277 E. Broad St., Columbus, **$128,948.** CD 1/26

S. C., Clemson—CHEMISTRY—Clemson Agricultural College, Clemson, Mar. 1, 3 story bsmnt., subbsmnt, and part 2 story, bsmnt., 115 x 243 ft. U-shaped brick, limestone, rein.-con., steel chemistry bldg., from Industrial Builders, Inc., Anderson, **$514,730.** CD 2/10.

† **Washington** — ADMINISTRATION, etc. — U. S. Eng., 4735 E. Marginal Way, Seatle, Zone 4, Mar. 2, administration bldg., dormitory, maintenance bldg. and houses for Chief Joseph Dam, Bridgeport, CIVENG 45-108-50-47, from Dally Constr. & Eng. Co., Inc., Dexter Horton Bldg., Seattle, Zone 4, **$602,093.**

▲ **Wash., Seattle** — POWERHOUSE — City, County-City Bldg., Zone 4, Mar. 1, excavation for Ross powerhouse and tunnels, from Peter Kiewit Sons Co., 300 Aloha St., **$1,434,300.** CD 2/23.

CONTRACTS AWARDED

Ariz., Tempe—COLLEGE—State, Arizona State College, Tempe, college bldg., 2 story administrative wing, 3 story classroom, department section, 93,000 sq. ft., steel air conditioning to Daum-Donaldson Constr. Co., 321 S. 24 St., Phoenix, **$926,944.** Bids 2/15, awarded 2/17. CD 2/2.

Calif., Berkeley—SCHOOL—State Div. Architecture, P. Wks. Bldg., Sacramento, general contract 1 story, 1218 sq. ft. Unit 1, 3 story, rein.-con. 54,140 sq. ft. Units 2 and 3, to Empire Constr. Co., 344 Harriet St., Oakland, **$522,000. Bids 2/21.** CD 2/28, under LB.

▲ **Calif., Camarillo**—HOSPITAL UNITS—State Div. Architecture, P. Wks. Bldg., Sacramento, general contract 1 and 2 story rein.-con. interconnected hospital bldg. Units F-16, F-17 and F-18 F-19, at Camarillo State Hospital, to Williams & Burrows & Carl N. Swenson, Inc., 10 California Dr., Burlingame, **$1,017,700.** Bids 2/21. CD 3/1, under LB.

Calif., San Francisco—YOUTH GUIDANCE CENTER—Dpt. P. Wks., City Hall, general contract Youth Guidance Center, Phase No. 3, to Morson Bros., 475 6 St., **$635,807.** Bids 2/15. CD 2/21, under LB.

Fla., Quincy—HOSPITAL—Gadsden Co., hospital, to Hogan & Horrman, 134 Beach Dr. N. **$783,682.** Bids 2/14, awarded 2/21. CD 2/21, under LB.

Ill., Elgin—SCHOOL—Bd. Educ. Dist. 46, 1 and 2 story brick, steel, concrete North Junior High School, to Illinois Hydraulic Co., 20 N. Crystal St., **$642,375.** Bids 2/20, awarded 2/27. CD 3/2, under LB.

Ill., Herscher—SCHOOL—Herscher School Unit, 2 story, steel, rein.-con., face brick school addns., to Robert Regan, 25 N. Ottawa St., Joliet, **$260,000.** S. W. Wilkins, Volkman Bldg., Kankakee, archt. Arnold J. Kruegel, 4 E. Clinton St., Joliet, assoc. archt.

Ill., Morris—HIGH SCHOOL—Morris High School, 2 story, bsmnt. high school, on Rte. 47 at Division St., to Roy C. Clark, 840 E. Chicago Ave., East Chicago, **$850,000.** Awarded 2/20. CD 12/1.

Ind., East Chicago—SCHOOL—East Chicago School Bd., 4819 Magoun St., 2 story, bsmnt., 200x400 ft. brick, Eugene Field School, to John A. Adinolfi, 3922 Main St., **$789,815.** Bids 1/10, awarded 2/20. CD 2/13, under LB.

Ia., Des Moine—PARKING—City, City Hall, general contract and electrical work ramp parking bldg., 7 and Mulberry Sts., to Fane F. Vawter & Co., 816 Farm Bureau Bldg., **$358,790.** Bids 2/16. CD 1/31.

Kan., Wichita—SCHOOL—Bd. Educ., Admin. Bldg., 428 S. Broadway, Zone 2, general contract Wm. Mathewson Intermediate School, 17 and Volutsia Sts., to Martin K. Eby Constr. Co., 610 N. Main St., **$648,690.** Bids 2/20. CD 1/25.

Md., Gaithersburg—SCHOOL—Montgomery Co. Bd. Educ., Rockville, 1 story, 260x288 ft., concrete, brick, cinder block, steel, Senior High School, to Byrne Organization, 2607 Connecticut Ave. N. W., Wash., D. C., **$515,400.** CD 2/23, under LB.

▲ **Mass., Chelsea**—HOUSING—City, Chelsea Housing Auth., Chelsea, 130 unit, 2 and 3 story, bsmnt. housing, State Aided Proj. 200-2, Revere Beach Parkway, to White Constr. Co., 18 Tremont St., Boston, **$1,227,400.** Bids 2/1, awarded 2/27. CD 2/10, under LB.

Mass., Cohasset—SCHOOL—Town, School Dpt., Junior and Senior High School, Pond St., to Voipe Constr. Co., 54 Eastern Ave., Malden, **$585,978.** Bids 2/15, awarded 2/24. CD 2/24, under LB.

▲ **Mass., New Bedford**—HOUSING—City of New Bedford Housing Auth., Presidential Heights, New Bedford, housing Proj. 200-2, Dartmouth St., Rockdale Ave. and Mathew St., to Platt Constr. Co., Inc., 99 First St., Cambridge, **$1,210,834.** Bids 2/24, awarded 3/3. CD 3/3, under LB.

Mich., Birmingham—SCHOOLS—Birmingham Bd. Educ., Chester St., Sect. A, 1 story, 36x44 ft., Sect. B, 1 story, 26x33 ft., Walnut Lake School addn., and 1 story, 45x332 ft. Lorry School, to J. C. Nielson Co., 1209 Morse St., Royal Oak, **$254,000.** Bids 2/21, awarded 2/27. CD 3/2, under LB.

Mont., Butte—CIVIC CENTER—City, City Hall, general contract civic center, to Cahill-Mooney Constr. Co., 220 E. Front Ave., **$679,976;** mechanical work, to Rearden's Plumbing, Heating & Electric Co., 129 E. Park St., **$252,998.** Bids 1/31. CD 2/16, under LB.

▲ **N. J., Westfield**—HIGH SCHOOL—Bd. Educ., Westfield, Senior High School, Darian Rd., to Walter Kidde Constructors, Inc., 140 Cedar St., New York, Zone 6, N. Y. **$1,433,000.** CD 2/24, under LB.

N. C., Raleigh—AGRONOMY and HEAD HOUSE—North Carolina State College, J. G. Vann, Asst. Controller, Raleigh, agronomy and head house, to Southeastern Constr. Co., 205 E. Bland St., Charlotte, **$687,879.** Bids 2/16. CD 2/27, under LB.

O., Painesville—HIGH SCHOOL—Painesville Bd. Educ., 167 W. Washington St., Harvey High School addn., to John Gill & Sons Co., Bulkley Bldg., Cleveland, **$529,990.** Bids 3/2. CD 1/27.

S. D., Watertown—SCHOOL—Bd. Educ., Watertown, general contract Roosevelt Grade School, to Gray Constr. Co., Watertown, **$265,935.** Bids 2/21. CD 1/13.

Alta., Coutts—CUSTOMS, etc.—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., customs and immigration bldg., to Bird Constr. Co., Ltd., 3 Ave. and 14 S. S., Lethbridge, Approx. **$444,762.** CD 12/5, under LB.

B. C., Cranbrook—HIGH SCHOOL—Bd. Trustees School Dist. 2, Cranbrook, frame Junior-Senior High School, to Dawson & Hall Ltd., 775 Clark Dr., Vancouver, **$599,252.** Awarded 3/1. CD 5/4/47.

Ont., Strathroy—INSTITUTE—Strathroy District Collegiate Institute Bd., G. McDonald, secy., Strathroy, 47x128 ft., brick, steel collegiate institute addn., alterations, to Coles-Jeffrey Constr., Ltd., 175 Exmouth St., Sarnia. Approx. **$725,000.** Bids 2/8. CD 1/19.

Que., Huntingdon—SCHOOL—School Comn., Huntingdon, 3 story, 52x139 ft. and 30x65 ft. concrete, brick school, to G. Perrault, 198 St. Joseph St., Joliette, **$261,000.** J. M. Lafleur, 72 St. Lucile St., Valleyfield, archt.

Que., Longueuil — SCHOOL — School Comn., Longueuil, school, Sacre-Coeur-St. Charles, to F. Ross Constr. Co., Ltd., 736 Cote St. Catherine Rd., Montreal, **$310,000.** L. Keroack, Boucherville, archt. Lolonde & Valois, Canada Cement Bldg., ~~Montreal~~, engrs.

Que., St. Hubert and Longueuil Annex—SCHOOL—Catholic School Comn., P. A. A. Dufresne, secy., Longueuil, Sacre Couer School near St. Hubert, and St. Charles School in Longueil Annex, to Frank Ross Constr. Co., Ltd., 736 Cote St. Catherine Rd., Montreal, Approx. **$310,000.** L. Keroock, Boucherville, archt. Lalonde & Valois, Canada Cement Bldg., Montreal, engrs.

Que., St. Laurent—SCHOOL—School Comn., L. Deguier, secy., 2 story, 60 x 115 ft., concrete brick school, Blvd. Decarie, to D'Amours & Brother Ltd., 2633 Bourbonniere Montreal, **$301,000.** A. Martineau, 200 Bay St., Ottawa, Ont., archt.

Que., Valois—SCHOOL—School Comn., Beaconsfield, 1 story, 176 x 240 ft., concrete, steel, brick 10 classroom school, auditorium, etc., to L. G. Tarlton Ltd., 912 McEachern Ave., Outremont, **$330,000.** CD 11/9.

COMMERCIAL BUILDINGS

BIDS ASKED

Pa., Phila.—HOSPITAL—B.A. 3/20—Phila. Psychiatric Hospital Assn., Ford Rd. and Monument Ave., hospital addn. $250,000. Extended date. Louis I. Kann, 1728 Spruce St., archt. CD 3/1.

Wis., Ripon—DORMITORY—B.A. 3/21—Ripon College, Ripon, 3 story, 280,000 cu. ft. men's dormitory. Extended date. Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., archts. Auler, Irion, & Wertsch, Oshkosh, assoc. archts. CD 3/1.

Minn., Minneapolis—CHURCH—B.A. 3/22—First Unitarian Society, 1526 Harmon Pl., 2 story, brick church, 900 Mt. Curve Ave. $270,000. Long & Thorshov, 400 Metropolitan Life Bldg., archts. CD 6/2.

Pa., Phila—SCIENTIFIC LABORATORIES—B.A. 3/22—Simon & Bouliware, archts., 123 S. Broad St., alumni scientific laboratories for Drexel Institute of Technology, 32 and Chestnut St. $350,000. CD 12/27/48.

Fla., Winter Park—LIBRARY—B.A. 3/23—Rollins College, Winter Park, (selected list of bidders) library. Approx. $250,000. James Gamble Rogers II, Winter Park, and George H. Spohn, Winter Park, assoc. archts. CD 2/10, under LB.

Mass., Boston—HEADQUARTERS—B.A. 3/23—Salvation Army, 221 Columbus Ave., 3 story, bsmnt., headquarters bldg., Berkeley St. at Columbus Ave. • Plans deposit $25. Andrews, Jones, Biscoe & Gocall, 50 Congress St., archts.

Mich., Highland Park—OFFICE—B.A. 3/23—Brotherhood of Maint. of Way, 61 Putnam Ave., 2 story, bsmnt., 99x115 ft., masonry, structural steel, concrete office bldg. $250,000. Albert Kahn Assoc. Architects & Engineers, Inc., 345 New Center Bldg., Detroit, archt.

Ill., Chicago — APARTMENT — Bids Asked — Chippewa Apartments, 5050 S. East End, Zone 15, (selected list of bidders), 14 story, concrete apartment, $700,000. Friedman, Alschuler & Sincere, 223 W. Jackson St., Zone 6, archts.

▲ **Tex, Fort Worth**—OFFICE—Bids Asked—Continental Insurance Co., c/o Sterling Holloway, Commercial Standard Bldg., 12 to 20 story, bsmnt. office, 7 and Main Sts. Approx. $4,000,000. Preston M. Geren, 905 Neil P. Anderson Bldg., archt. CD 1/6.

▲ **Tex., Houston**—OFFICE—Bids Asked—San Jacinto Hotel, Main and Walker Sts., converting 10 story San Jacinto Hotel into an office and stores bldg. **$2,000,000.** Kenneth Franzheim, 2306 Crawford St., archts.

Tex., Houston—OFFICE—Bids Asked—Transcontinental Building Corp., c/o Transcontinental Gas Pipe Line Corp., Oil and Gas Bldg., 3 story office, fronting, Travis and Milam Sts. $850,000. P. E. Zimmerman & Hollis U. Bible, 500 Stuart St., engrs. and archts. CD 1/19.

SOON LETS CONTRACT

Calif., Stockton—RECREATION CENTER— Y.M.C.A., Channel and San Joaquin Sts., soon lets contract partial 3 story, 128x136 ft., rein.-con. Y.M.C.A. recreation center. $325,000. E. G. Ernst, 561 E. Harding Way, and John Upton Clowdsley, Exchange Bldg., archts. CD 11/18.

Fla., Miami Beach — HOTEL — Morris Blossom, c/o August Swartz, archt, 511 N.E. 28 St., Miami, soon lets contract hotel.

Fla., Miami Beach—THEATER—Wometco Theaters, c/o Michael J. DeAngelis, archt., Butler Bldg., Rochester, N. Y., soon lets contract Carib theater. CD 2/20.

Ill., Chicago Heights—OFFICE—Illinois Bell Telephone Co., 212 W. Washington St., Chicago, soon lets contract 2 story, brick, steel, concrete dial office. Holabird, Root & Burgee, 180 N. Wabash St., Chicago, archts. CD 1/11.

La., New Orleans—SERVICE—Krauss Dpt. Store, 1201 Canal St., soon lets contract, 6 story, 128x200 ft. service bldg., and 6 story 33x128 ft. store addn. Favrot, Reed, Mathes & Bergman, Nola Bldg., archts. CD 2/10.

Mich., Detroit—SCHOOL—Peace Lutheran Church, 4890 Balfour Rd., soon lets contract 2 story, part bsmnt., 100x100 ft., masonry, concrete school. $250,000. N. Chester Sorenson, 406 Hammond Bldg., archt.

Neb., Omaha—SCHOOL—St. Margaret Marys Parish, 62 and Dodge Sts., soon lets contract school. $400,000. L. A. Daly Co., 629 Insurance Bldg., archt. CD 2/2.

Okla., Bartlesville — DORMITORIES, etc. — Central Christian College, Bartlesville, soon lets contract 2 dormitories and gymnasium for Central Christian College. $250,000. Hanton & Wilson, Elliott Bldg., Tulsa, archts. CD 2/10.

Pa., Essington—SCHOOL—B.A. 3/14—St. Margaret Mary Alacoque Roman Catholic Church, Wanamaker Ave. and Governor Printz Blvd., soon lets contract school and chapel. $250,000. Frank J. Ricker & Louis A. Axt, 6115 Hudson Ave., West New York, N. Y., archts.

Tex., Baytown—MERCANTILE—Sears, Roebuck & Co., 1409 S. Lamar St., Dallas, soon lets contract 164x261 ft. mercantile, 4½ acre tract. $325,000. George L. Dahl, 2101 N. St. Paul St., Dallas, archt. CD 2/20.

▲ **Tex., Houston**—**DWELLINGS**—Pederson Realty Co., (Sunnyside Gardens) 2046 Cortindt St., soon lets contract, 50 dwellings in area Sunnyside Addn., $325,000; 50 dwellings near Sims Bayou, $350,000; 60 dwellings off 9500 Blk. Chocolate Bayou $360,000; 75 addnl. (Negro) dwellings, in various locations, $475,000. J. R. Tabor & Assoc., Union Natl. Bank Bldg., archts. Robert Atkinson, 1st Natl. Bank Bldg., engr. CD 3/3.

Wis., Manitowoc—SCHOOL—St. Boniface Congregation, 1110 S. 10 St., soon lets contract 2 story, bsmnt., 47x119 ft. school, and 1 story, 86x118 ft. and 12x40 ft., gymnasium, brick, steel, stone, concrete fdns. and floors. F. W. Raeuber, 1023 S. 9 St., archt.

LOW BIDDERS

▲ **Calif., Los Angeles**—STORE—Sears, Roebuck & Co., 2650 E. Olympic Blvd., Feb. 28, 2 story, brick, concrete store, Victory Blvd. and Laurel Canyon Rd., from Haddock Engineers Ltd., 1616 S. Greenwood Ave., Montebello. Approx. **$1,500,000.** CD 2/13.

▲ **N. Y., New York**—OFFICE—Time, Inc., 9 Rockefeller Plaza, Zone 20, project abandoned office at 270 Park Ave. Est. **$20,000,000.** CD 3/13/47, under CA.

▲ **Pa., Johnstown**—HOSPITAL—Mercy Hospital, Johnstown, Feb. 20, 7 story brick, tile, steel hospital and boiler plant, from Berkibile Bros., 625 Swank Bldg., Pittsburgh. Approx. **$1,000,000.** CD 2/14.

Tenn., Nashville—THEATRE—Crescent Amusement Co., c/o low bidder, theater, from Foster & Creighton Co., American Natl. Bank Bldg., **$717,419.** CD 2/14.

Que., Cap de la Madeleine—COMMUNITY DEVELOPMENT—Model Plan Develcoment Co., c/o Mayerovitch & Bernstein, archts., 1502 St. Catherine St., W., Montreal, 100 house community development from Ain & Zakuta Ltd., 6910 Wiseman Ave., Montreal, Approx. $630,000. CD 12/6.

CONTRACTS AWARDED

Calif., Hayward—RESIDENCES—New Hayward Homes, 315 13 St., Oakland, 126 residences in Tract 966, to Tarman & Bechtel, 315 13 St., Oakland. Approx. **$756,000.**

Calif., Norwalk—DWELLINGS—Ponty Jr., Inc., 548½ N. Hollywood Way, Burbank, 100 frame, stucco dwellings, Maidstone, Jersey and Fallon Ave. Owner builds. **$553,950.** Paul Duncan, 4823 Laurel Canyon Blvd., Los Angeles, archt.

▲ **Calif., San Francisco**—OFFICE—Home Insurance Co., 341 Montgomery St., 4 story (ultimately 9 story) office to Cahill Bros., Inc., 206 Sansome St. Approx. **$1,000,000.** CD 3/7.

▲ **Colo., Pueblo**—HOSPITAL—Sisters of Charity, Mother General Mary Zoe, Delhi Pk., Cincinnati, O., 6 or 7 story, 250 room hospital west of present St. Mary's Hospital, to Platt Rogers, Inc., 1530 W. 13 Ave., Denver. Approx. **$5,000,000.** Fisner & Fisher, Denver Natl. Bank Bldg., Denver, archts. and engrs. CD 8/11/48.

▲ **Conn., Hamden**—HOUSING—Veggo F. Larsen Co., 434 Temple St., New Haven, 130 frame houses. Owner builds. **$1,170,000.**

Fla., Jacksonville—DWELLINGS—H. S. Brownett Co., 578 Margurite St., Zone 4, 120 family masonry dwellings, Longwood Subdivision on Southside. Owner builds. **$850,000.** Awarded 2/24. Wm. H. Marshall Clark Bldg., Zone 2, archt.

Fla., Lakeland—HOMES—P.M.W. Corp., c/o George H. Percival, 249 S. Dr., Miami Springs, 82 homes. Owner builds, **$550,000.**

▲ **Ga., Atlanta**—APARTMENT—The Howell House, Inc., c/o Lyles, Bissett, Carlisle & Wolff, archts, 1302 Main St., Columbia, S. C., 16 story, 532 unit apartment, to Long Constr. Co., c/o archt. Approx. **$5,000,000.**

Ill., Chicago—CHURCH, etc.—St. Paul Evangelical Reformed Church, Orchard and Fullerton Sts., Zone 14, 3 and 4 story, bsmnt., steel face brick, stone church and parish house, to R. C. Wiedboldt Co., 2353 S. Blue Island St., Zone 8, **$600,000.** Ben Franklin Olson, 19 S. La Salle St., Zone 3, archt.

▲ **Ind., Indianapolis**—STORE—Equitable Life Assurance Co., 393-7 Ave., New York, N. Y., superstructure, 3 story, bsmnt., irregular shaped 54,370 sq. ft. masonry, rein.-con., structural steel department store, Monument Circle, to Frank Messer & Sons, Inc., 4612 Paddock Rd., Cincinnati 29, O. **$5,250,000.** J. C. Penney Co., 330 W. 34 St., New York, N. Y., lessee, Bids 12/15. CD 12/13.

▲ **Kan., Leavenworth**—RESIDENCES—Country Club Development Co., Professional Bldg., 200 residences. Owner builds. **$2,000,000.**

Kan., Leavenworth—DWELLINGS—L. L. Rafter, 523 Walnut St., 60 dwellings. Owner builds. **$550,000.**

▲ **La., Abbeville**—HOUSING—Bailey-Porter Constr. Co., Lafayette, 150 houses. Owner builds. **$1,000,000.**

▲ **Mass., Boston**—STORE—Jordan Marsh Co., 450 Washington St., Unit 2, 7 story, bsmnt., brick dept. store, Summer St., to Thompson-Starrett Co., Inc., 201 Devonshire St. Approx. **$2,500,000.** Bids 1/19, awarded 2/27. CD 1/25.

Mich., East Lansing—THEATRE, etc.—Louben Bldg. Co., c/o Arnold & Fuger, archts., 510 Madison Bldg., Detroit, rein.-con., structural steel, masonry theatre and retail store development, to Lerner Linden Constr. Co., 9940 Roselawn St., Detroit. Est. **$500,000.** Bids 2/21, awarded 2/28. CD 2/16.

Neb., Fremont—DWELLINGS—Maenner Built, Inc., City Natl. Bank Bldg., Omaha, 64 dwellings. Owner builds. **$500,000.**

▲ **Neb., Omaha**—DWELLINGS—Carl C. Wilson, Inc., City Natl. Bank Bldg., 127 dwellings in vicinity of 36 and Lake Sts. Owner builds. Approx. **$1,000,000.**

N. J., Tenafly—HOUSES—Lawrence Manor Homes, c/o Frederick W. Harsen, Summit St. and E. Railroad Ave., 35 one family houses, Knickerbocker Rd. Owner builds, **$500,000.**

▲ **N. Y., Albertson**—HOUSES—Hillside Terrace Homes, c/o William La Valle, archt., 164-09 Hillside Ave., Jamaica, 300 one family houses, Willis Ave. and Willets Rd. Owner builds. Approx. **$3,000,000.**

N. Y., Douglaston—CONVENT—St. Aanastasia Church, Rev. George Helfenstein, pastor, 45-05 245 St., convent bldg., Northern Blvd. and 245 St., to Thomas J. Hughes Constr. Co., 22-02 40 Ave., Long Island City. Approx. **$500,000.** Beaty & Berlenbach, 32 Court St., Brooklyn, Zone 2, archts.

▲ **N. Y., Great Neck**—APARTMENT—Joseph Mascioli and Julius & Samuel Guterman, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, 652 family garden apartments, at Northern Blvd. and Cutter Mill Rd. Owner builds. Approx. **$6,000,000.**

▲ **N. Y., New Rochelle**—APARTMENT—Davenport Arms, Inc., c/o Leon & Lionel Levy, archts., 331 Madison Ave., New York, Zone 17, 3 story garden apartments Davenport Ave. and Hudson Rd. Owner builds. Approx. **$1,770,000.**

▲ **N. Y., Roslyn Harbor**—HOUSES—Stackler & Frank Mid-Century Houses, c/o Alwin Cassens Jr., 116-55 Queens Blvd., Forest Hills, 50 one family houses on 75 acre tract, Bryant Ave. Owner builds. Approx. **$1,000,000.**

▲ **N. Y., Schenectady**—HOMES—Syndicate, c/o contractor, Van Buren Park Homes, 172 family 2 story garden apartments on 12 acre site at Eastern Parkway and Daisy Lane, to M. Shapiro & Son Constr. Co., Inc., 254 W. 54 St., New York, Zone 19. Approx. **$1,420,000.** Kelly & Gruzen, 80 Fifth Ave., New York, Zone 3, archts.

N. Y., White Plains—HOSPITAL—White Plains Hospital, 41 E. Post Rd., hospital alterations, addn., to Irons & Reynolds, 420 Lexington Ave., New York, Zone 17, **$875,000.** Awarded 1/1. CD 10/21.

▲ **N. C., Charlotte** — APARTMENT — Newland Road Apartments, c/o contractor, 178 unit apartment, to C. D. Spangler Constr. Co., 1933 S. Boulevard. Approx. **$1,000,000.**

N. C., Greensboro—OFFICE—J. P. Stevens Co., c/o contractor, office, to C. M. Guest & Sons, Greensboro. Approx. **$500,000.** Bids 2/15. CD 1/24.

N. C., Raleigh—APARTMENT—Northside Apartments, c/o Thomas Wilson & E. N. Richards, 701 Georgetown Rd., 116 unit apartment, Nobel Rd., northeast of county home property. Owner builds. **$700,000.**

O., Cleveland—HOMES—J. Elmer Barnum, 58 E. Bridge St., Berea, 43 ranch type homes, Lindberg Blvd., separate contracts. **$731,000.**

O., Cleveland—HOMES—John and Steve Filipek, 9707 Columbia Rd., Olmsted Falls, and Mrs. U. Frick, c/o Frick Realty, 15523 Detroit Ave., Lakewood, thirty-six 1½ story, brick homes, Sprague Rd., separate contracts. **$540,000.**

O., Maple Heights—HOMES—S. N. Cultrona, 2642 E. 130 St., Cleveland, fifty-five 1½ story, frame homes, Kennerdown, Corridan and Reddington Sts., separate contracts. **$605,000.**

O., North College Hill (br. Cincinnati)—RESIDENCES—Parr & Bufler, Marbev Ave., North College Hill Station, Cincinnati, Zone 26, sixty 1 story, bsmnt., brick residences, separate contracts. **$600,000.** CD 1/17.

Ore., Eugene—HOSPITAL—Sacred Heart Hospital, Eugene, general contract, 6 story hospital addn., to R. B. Hammond, 1241 N. Williams St., Portland, **$769,915.** Bids 2/15. CD 2/24, under LB.

▲ **Pa., Beverly Hills (Upper Darby P.O.)**—APARTMENT, etc.—Pheasant Farms, Inc., 856 Main St., Darby, apartment and shopping center, Garrett and Marshall Rds., to Turner Constr. Co., 1500 Walnut St., Phila., **$13,000,000.** Karl F. Otto, 1528 Buckingham Dr., Rosemont, archt.

Pa., Phila.—RESIDENCES—Grafton Homes, Inc., 1512 Walnut St., residential development, northeast sect., separate contracts, **$800,000.** Morris J. Rosenthal, 16 St. Broad St., archt.

▲ **Pa., Phila.**—APARTMENT—Kevy K. Kaiserman & Matthew H. McCloskey, Jr., 1620 W. Thompson St., apartment, 18 and Walnut Sts., separate contracts. **$6,500,000.** Samuel I. Oshiver & J. Raymond Knopf and J. Ethan Fieldstein, 1704 Walnut St., archts. CD 1/12.

Pa., Phila.—RESIDENCES—Utal & Hauser, 132 Garrett Rd., Upper Darby, residential development, Knorr St., separate contracts. **$688,000.**

Tex., Beaumont—DWELLINGS—H. V. Howell, Beaumont, 172 dwellings, own forces. Approx. **$950,000.** CD 2/24.

▲ **Tex., Bergstrom Field (P.O. Austin)**—HOUSING—Dpt. Air Force, The Pentagon, Wash. 25, D. C., construct, manage, and finance 480 unit rental housing, to Earl A. Thompson & Assoc., Milam Bldg., San Antonio, **$4,320,000.** CD 2/16, under LB.

▲ **Tex., Fort Sam Houston**—DWELLINGS—Commanding Officer, 4th Army, Fort Sam Houston, construct, manage and finance, 200 single-family brick veneer type dwellings for officers, concrete slab fdn. and 300 rental single-family brick veneer dwellings for non-commissioned officers, concrete slab fdn., to Hub Hill & Assoc. Andrews Bldg., Dallas, **$2,400,000** and **$3,600,000** respectively. CD 11/21.

Tex., Houston — DWELLINGS — Ayrshire Corp., 6825 Academy St., 50 addnl. dwellings, own forces. Approx. **$750,000.** CD 2/23.

▲ **Tex., Houston**—DWELLINGS—Fairworth Co., 1932 North Blvd., 260 dwellings. Owner builds. Approx. **$2,750,000.** CD 2/15.

Tex., Houston—DWELLINGS—Homer Y. Jones & Assoc., Sterling Bldg., 68 dwellings in Glenmore Forest, to Jones Constr. Co., Sterling Bldg. Approx. **$525,000.** CD 2/6.

▲ **Tex., Houston**—DWELLINGS—Texas Eastern Transmission Corp., Commerce Bldg., 135 dwellings for workers and executives occupancy along route of line, to Atlantic Building Corp., 1200 Givens St. Approx. **$1,150,000.**

Tex., Pasadena—DWELLINGS—C. O. Beeler Lumber Co., Inc., 2300 Pease St., Houston, 75 dwellings. Owner builds. Approx. **$500,000.** CD 2/15.

Que., Cap de La Madeleine—ORPHANAGE—Reverend Sisters of Dominicaines du Rosaire, 1455 Blvd. du Carmle, Three Rivers, 3 story, 40x147 ft., 77x103 ft., 45x150 ft., concrete, brick orphanage, to J. P. Morin Regd., 428 Notre Dame St. Approx. **$850,000.** Gascon & Parent, 934 St. Catherine E., Montreal, archts.

Que., Montreal—APARTMENT—S. D. Miller & Sons, 6999 Cote des Neiges Rd., apartment, etc. Sherbrooke St., E., to R. Handfield, 3962 Maplewood Ave., **$560,000.** Elisoph & Berkowitz, 1434 St. Catherine St W., archts.

▲ **Que., Montreal**—Y.M.C.A. BLDG.—Y.M.C.A., 1124 Dorchester St. W., 7 story, bsmnt., 120x185 ft., rein.-con., steel, brick, stone Y.M.C.A. bldg., to Anglin-Norcross Quebec Ltd., 892 Sherbrooke St. W. Approx. **$1,300,000.** CD 2/7.

INDUSTRIAL BUILDINGS

BIDS ASKED

Ont., Sarnia—WAREHOUSE—B.A. 3/20—J. R. Millar, purch. agt. Polymer Corp., Ltd., No. 40 Highway, 1 story, mill-type 103x215 ft., structural timber, storage warehouse, Approx. **$175,000.** CD 3/6/47.

Ont., Toronto—WAREHOUSE, etc.—B.A. 3/23—Chapman & Oxley, archt., 57 Bloor St. W., 2 story, 205x266 ft., brick, steel, rein.-con., limestone warehouse and office, Fleet and Jarvis Sts., for Northern Electric Co., Ltd., 131 Simcoe St. Approx. **$750,000.** CD 11/17.

Ont., Sault Ste. Marie—PLANT—B.A. 3/27—Mathers & Haldenby, archts., 15 St. Marys St., Toronto, newspaper plant, for Sault Star Ltd., 374 Queen St. Approx. **$100,000.**

Conn., Norwalk—Bids Asked—FACTORY—Perkin Elmer Corp., Hope St., Stamford, structural steel for 1 story, 40,000 sq. ft. brick, steel factory. **$200,000.** Fletcher Thompson, Inc., 211 State St., Bridgeport, archt. CD 12/7.

Ill., Chicago—PLANT EXPANSION—Bids Asked—Glidden Co., 2670 Elston Ave., Zone 18, 25,000 sq. ft. food processing plant expansion. **$150,000.** Everett F. Quinn, 134 N. LaSalle, Zone 2, archt.

CONTRACTS AWARDED

La., Gretna—PLANT—Southern Cotton Oil Co., Gretna, 4 story, 120x222 ft., masonry, steel shortening plant, to Perrilliat-Rickey Constr. Co., 1530 S. Rendon St., New Orleans, **$695,226.** Bids 2/1, awarded 2/28. CD 2/8, under LB.

Mich., Detroit—WAREHOUSE—Davidson Bros., Inc., c/o Chas. N. Agrie, Inc., archt., 1140 Book Bldg., 1 story, 325x353 ft. masonry and structural steel warehouse addn., to J. A. Utley Co., 723 E. New Hampshire St., Royal Oak, **$500,000.** Bids 2/20, awarded 2/23. CD 2/16.

▲ **Mich., Plymouth**—PLANT—General Motors Corp., 5140 Riopelle Ave., superstructure, 1 and 2 story, 432x463 ft., structural steel, masonry, Detroit transmission division plant addn., to Darin & Armstrong, Inc., 2041 Fenkell Ave., Detroit. Est. **$2,000,000.** Bids 2/23, awarded 3/1. CD 2/16.

▲ **Minn., Virginia**—PLANT—Oliver Iron Mining Co., c/o United State Steel Corp., 71 Broadway, New York, N. Y., 5 story, sintering machine and raw material plant, nodulizing kiln and loading bins, pug mills, on Mesabi Range, near here, to Arthur G. McKee & Co., 2300 Chester St., Cleveland O.; steel to American Bridge Co., Frick Bldg., Pittsburgh, Pa. Total est. **$6,000,000.**

O., Warren—WAREHOUSE—Mullins Mfg. Corp., George E. Whitlock, pres., Warren, 264x560 ft. warehouse adjoining south wall of main plant, to Richard Hawks, Warren. Approx. **$700,000.**

▲ **Tex., Brownsville**—COTTON COMPRESS, etc.—Anderson Clayton & Co., Cotton Exchange Bldg., Houston, cotton compress and warehouse, 8 acres under one roof, rein.-con., fdn., drainage sys., fire wall and concrete floor slab, to Brown & Root, Inc., Box 3, Houston. Approx. **$825,000;** fabricating, erecting steel bldg., to Capitol Steel & Iron Co., 1726 S. Agnew St., Oklahoma City, Okla. Approx. **$875,000.** R. L. Cook, c/o owner, engr.

▲ **W. Va., Rivesville** — PLANT — Monongahela West Penn Power Fairmont, design and construction brick, concrete, steel frame power plant addn., to Sanderson & Porter, 52 Williams St., New York, N. Y., **$12,500,000.**

Alaska, Juneau—SAWMILL—Juneau Lumber Co., Juneau, rebuilding sawmill of Juneau Spruce Corp., day labor. Approx. **$600,000.** CD 9/15.

▲ **Ont., London**—PLANT—Kelvinator of Canada, Ltd., Dundas St. E., steel, brick plant addns., concrete floors, to Hyatt Bros. Constr. Co., 288 Egerton St. Approx. **$2,000,000.** CD 2/6, under LB.

Ont., Windsor—PLANT—Chrysler Corp. of Canada Ltd., 300 Tecumseh Blvd. E., 2 story, 80x360 ft. north exten. and 240x360 ft., brick steel south exten. Plant 3, to Pigott Constr. Co., Ltd., Pigott Bldg., Hamilton, Approx. **$400,000-$800,000.** Bids 2/20. CD 2/25.

UNCLASSIFIED

BIDS ASKED

Ont., Toronto—STRUCTURAL STEEL—B.A. 3/20—Toronto Transportation Comn., 35 Yonge St., 1,200 tons unfabricated structural steel for subway. CD 1/9/46.

Kansas—RURAL DISTRIBUTION LINES—B. A. 3/21—Western Co-operative Assn., Wakeeney, **427.37 mi.** rural distr. lines, 50.75 mi. conversion lines, in Rooks, Sheridan, Graham, Gove, Trego, and Ellis Counties. $475,000. Frank Horton & Co., Lamar, Mo,. engrs. CD 10/7.

Nebraska—RURAL DISTRIBUTION LINES—B.A. 3/21—Consumers Public Power Dist., 1452 25 Ave., Columbus, furnish material, equip., labor, supervision, transportation, and misc. expense to construct and reconstruct rural distr. lines from Loup River Public Power Dist. sub-station south and east of Norfolk, west to Oakdale via Battle Creek, Meadow Grove and Tilden, Plans deposit $15.

N. Y., Brooklyn—STEAM LINE—B.A. 3/21—Pub. Wks. Office, Third Naval Dist., 50 Church St., New York, Zone 7, replacing overhead steam line at Naval Clothing Depot, NOY 20201, Spec. No. 23724.

Kansas—RURAL DISTRIBUTION LINES—B. A. 3/22—C. M. S. Electric Co-operative, Meade, Part I, 292.65 mi. rural distr. lines, 52.5 mi. conversion lines in Gray, Seward, Meade and Clark Counties; Part II, 223.1 mi. rural distr. lines, 30.5 mi. conversion in Clark, Iowa and Comanche Counties. $575,000, Frank Horton & Co., Lamar, Mo., engrs. CD 6/6.

Pa., Norristown—STEAM DISTRIBUTION SYSTEM—B.A. 3/22—General State Auth., 18 and Herr Sts., Harrisburg, steam distr. sys. alterations at Norristown State Hospital. $250,000. Plans deposit $10. Stewart A. Jellet Co., 1200 Locust St., Phila., engr.

Tenn., Knoxville—CATTLE BARN—B. A. 3/22—City, City Hall, cattle barn at John Tarleton Institute. Plans deposit $25. Richard S. Bagwell, Goode Bldg., archt.

† **Va., Little Creek**—PARKING LOT RESURFACING—B. A. 3/22—Pub. Wks. Office, Fifth Naval Dist., U. S Naval Base, Norfolk, Zone 11, resurf. parking lot at the Naval Amphibious Base NOY 20316, Spec. No. 23817. Plans deposit $10.

† **Arkansas**—TRANSMISSION LINE—B.A. 3/23—Southwestern Power Admin., P. O. Drawer 1619, Tulsa 1, Okla., 34 mi. 154 kv. transmission line from Pocahontas to Doniphan. $110,000.

Oregon—RURAL DISTRIBUTION LINES—B.A. 3/23—Central Electric Co-operative, Inc., Redmond, 32 mi. rural distr. lines, in vicinity of Sisters and Prineville, Deschutes and Crook Counties. Plans deposit $10. Ribert Welty, The Dalles, engr.

N. Y., Jones Beach—HYDRAULIC FILL—B.A. 3/24—Long Island State Park Comn., Babylon, place approx. 113,000 cu. yd. hydraulic fill for construction of Overlook Parking Field 1 at Jones Beach State Park. CD 6/19/44.

Arkansas—RURAL DISTRIBUTION LINES—B.A. After 3/25—C. & L. Rural Electric Co-operative Corp., Lynn Thomasson, mgr. Star City, 130 mi. single-phase rural distr. lines to serve 496 members; 14 mi. 33kv transmission line, one 600 kva sub-station one 1500-kva sub-station to be relocated and approx. 100 mi. line to be converted from single-phase to two-phase and three-phase, in Cleveland, Lincoln, Jefferson, Grant, Bradley, Drey and Desha Counties. $525,000. Chanaberry Eng. Co., Realty Bldg., Louisville, 2, Ky., engrs. CD 2/27.

Minnesota—RURAL DISTRIBUTION LINES—B.A. 3/27—Rural Co-operative Power Assn., Elk River, about 127 mi. 69 kv transmission line in Hennepin, Wright, Meeker, Kandiyohi, Anoka, Pine, Chicago, and Isanti Counties, Minnesota 70, Hennepin. Approx. $130,000. Plans deposit $25. Extended date. CD 3/2.

La., Crowley—RICE EXPERIMENTAL STATION—B.A. 3/28—Louisiana State University, Baton Rouge, rice experimental station. Plans deposit $30. Extended date. Ricciuti, Stoffle & Assocs., Queen and Crescent Bldg., New Orleans, archts. CD 3/2.

O., Mansfield—BATHING BEACH, etc.—Bids Asked—Muskingum Conservancy Dist., L. S. Gena, ch. engr., Mansfield, sand bathing beach and bathhouse at Pleasant Hill Reservoir, 15 mi. southwest of here.

Texas—OIL PIPE LINE—Bids Asked—Sun Pipe Line Co., M. Esperson Bldg., Houston, 61 mi. 4- to 10-in. crude oil pipe line between Seabreeze and Sun Station, near Galveston. $610,000. CD 1/9.

LOW BIDDERS

Calif., Los Angeles—PLAYGROUNDS—City Playground Comn., City Hall, Feb. 23, Item 1, Denker Playground Bldg. and Item 3 Wabash Playground Bldg., from Wapner & Fremer, 5542 Cahuenga Blvd., **$72,907** and **$82,850** respectively; Item 2 Toberman Playground Bldg., from S. J. Cook & Son, 4508 W. Jefferson Blvd., **$76,598;** Items 1, 2, 3 combined, from Parr Constr. Co., 5677 Selmaraine Dr., Culver City, **$233,500.** CD 2/14.

Missouri—RURAL DISTRIBUTION LINES—Citizens Electric Corp., Theo. A. Carron, pres., St. Genevieve, cancelled bids to have been opened Feb. 28, labor only, 186.07 mi. 7.2 kv, single phase, rural distr. lines, St. Genevieve Co., Proj. Mo. 58D St. Genevieve. CD 2/13.

▲† **Oregon**—GENERATORS—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., Mar. 2, four 73,684 kva-alternating-current generators for McNary Dam powerhouse, CIVENG-45-164-50-80, from General Electric Co., River Rd., Schenectady, N. Y., **$6,556,290.**

Tex., Houston—WHARF—Harris County Navigation Dist., c/o Port Comn., Wharf 3, Mar. 2, 125x600 ft. span type, steel, rein.-con. wharf, from Farnsworth & Chambers Co., Inc., Box 74. **$811,805.** Est. $1,000,000. CD 2/1.

CONTRACTS AWARDED

Kansas—RURAL DISTRIBUTION LINES—Caney Valley Electric Co-operative Assoc. Inc., Cedar Vale, 397.19 mi. rural distr. lines, Chautauqua Co., to J. R. Foree, 302 National Bank Bldg., Topeka, labor **$168,038,** material **$347,000,** total $565,038. William H. Burgwin, 2657 S. Broadway, Denver, Colo., engr. CD 4/17/47.

Kentucky—RURAL DISTRIBUTION LINES—Warren Rural Electric Co-operative, Bowling Green, Sect. 210 mi. rural distr. lines, and Sect. 2, 129.2 mi. rural distr. lines, Warren Co., to Smith Constr. Co., 1000-44 Ave. N., Nashville, Tenn., **$213,970** and **$127,962** respectively; Sect. 3, 2.4 mi. rural distr. lines, Warren Co., to Trans-Electric Co., 106 E. Broadway, Louisville, **$225,158.** Grand total $567,090. CD 7/1.

Tex., Snyder—OIL LINE—Gulf Oil Corp., Gulf Bldg., Houston, 33 mi. 10 and 8 in. crude oil lines in Roscoe area, own forces. Approx. **$508,000.** CD 2/27.

Proposal Advertisements see pp. 75 to 77

OFFICIAL PROPOSALS

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SEND COPY TO OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 18, N. Y.

Bids: May 10, 1950 (620)

Tenders
Yonge Street Subway

TORONTO, ONTARIO
CONTRACTS S-3, S-4 AND S-5

Sealed tenders, endorsed "Tenders for Yonge Street Subway" will be received by the Toronto Transportation Commission at its office, 35 Yonge Street, Toronto, until 12:00 o'clock Noon, Eastern Standard Time, on Wednesday, May 10, 1950.

Individual tenders are invited for Contracts S-3, S-4 and S-5, or, if tenderers so desire, a combined tender may be submitted for all three contracts.

The work on Contract S-3 consists of building approximately 3814 lineal feet of subway of various sections, together with miscellaneous work appurtenant and collateral thereto, as specified and shown in the Contract Documents. The subway is to be constructed generally by what is known as "Cut and Cover Construction", with a short section of "Open Cut Construction" north of Ellis Avenue. The work is located on private and publicly owned rights of way immediately east of and parallel to Yonge Street, and extends from Alexander Street to Severn Street.

Contract S-4 consists of building approximately 850 feet of subway of various sections between Price Street and Shaftesbury Avenue and approximately 4525 lineal feet of "Open Cut Construction" together with miscellaneous work appurtenant and collateral thereto, as specified and shown in the Contract Documents. The work is to be constructed on public and privately owned rights of way a short distance east of Yonge Street and extends from Severn Street to Pleasant Boulevard.

Contract S-5 consists of building approximately 2100 lineal feet of subway of various sections, together with miscellaneous work appurtenant and collateral thereto, all as specified and shown in the Contract Documents. The work begins at a point east of Yonge Street at Pleasant Boulevard and continues northwesterly to cross Yonge Street at Lawton Boulevard; thence to the terminus of this contract at a point west of Yonge Street opposite the Mount Pleasant Cemetery, to be built in private and publicly owned lands and under private and publicly owned buildings.

Plans, Contract Documents, Tender Forms, and Instructions to Tenderer will be available to tenderers at the office of the Toronto Transportation Commission, 35 Yonge Street, Toronto, on and after Wednesday, March 8, 1950. Copy of the Contract Documents may be obtained by depositing One Hundred Dollars ($100.00) with the Commission for each set of documents. The amount of the deposit will be refunded on return of the plans and documents in good condition within ten (10) calendar days after the opening of tenders.

Tenders for individual contracts must be accompanied by cash or a certified cheque on a chartered bank doing business in the City of Toronto in the amount of Seventy-five Thousand Dollars ($75,000.00) for each contract. Cheques are to be made payable to the order of the Toronto Transportation Commission. Combined tenders for all three contracts shall be accompanied by cash or a certified cheque in the amount of Two Hundred and Twenty-five Thousand Dollars ($225,000.00).

The Toronto Transportation Commission reserves the right to reject any or all tenders and to disregard any informalities in the tenders or tendering.

No tender may be withdrawn after the scheduled closing time for receipt of tenders for at least forty-five (45) calendar days.

Wm. C. McBrien, Chairman,
TORONTO TRANSPORTATION
COMMISSION

Bids: March 30, 1950 (635)

Railroad Bridge

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ALPHA UNDERPASS

Construction of Railroad Bridge over Alpha By-Pass in the Borough of Alpha, Warren County, Federal Aid Secondary Project No. S-86(2).

Estimated:
6,000 cu. yds. Roadway Excavation
1,620 cu. yds. Foundation Excavation
1,620 cu. yds. Concrete
311,500 lbs. Structural Steel
55,907 lbs. Reinforcing Steel
Lump Sum—Erect, Maintain & Remove Detour Trestles and Materials

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, March 30, 1950, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and Supplements, and by Sections 2, 3 and 4, P. L. 521, 78th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Municipal Building, South Main Street, Phillipsburg, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to common labor employed on this contract shall be 75¢ per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J. and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

(Continued on page 76)

READ THE OFFICIAL PROPOSAL COLUMNS OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

(Continued from page 75)

Bids: April 3, 1950 (636)

Trench Work

Trench Work for 17,160 Feet of 24-inch and 16-inch C. I. Pipe.

Scranton-Spring Brook Water Service Co.
30 North Franklin St., Wilkes-Barre, Pa.

Bids will be received up to 2:30 P.M., Monday, April 3, 1950 for the excavation and backfilling of trench for approximately 14,500 lin. ft. of 24-inch and 2,660 lin. ft. of 16-inch cast iron pipe to be located mostly along State Highway Routes 40045 and 315 in Plains Township and Wilkes-Barre City, Pa. About 9,100 lin. ft. of the trench will be partly or wholly in rock, involving about 4,000 cu. yds. of rock excavation. The Water Co. will lay the pipe. Plans and Specifications may be obtained at the office of the Chief Engineer, at the above address and may be seen at the office of Thos. H. Wiggin, Consulting Engineer, 90 Broad St., New York 4, N. Y. A deposit of $25. will be required for Plans and Specifications. This will be refunded after return of same.

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(637)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACTS NOS. 16, 16A and 16B

The work to be done under these Contracts involves the construction of a south abutment, twenty south approach piers, thirteen north approach piers, a north abutment and two construcion road embankmens, one on each side of the river, and other incidental work, all in connection with the construction of the New Jersey Turnpike across the Hackensack River, near Laurel Hill, Hudson County, New Jersey.

Principal items of work for Contracts Nos. 16A and 16B include:

	Contract No. 16A	Contract No. 16B
Open foundation excavation—rock	....	1,013 cu. yds.
Open foundation excavation—other than rock	7,900 cu. yds.	3,000 cu. yds.
Concrete	10,000 cu. yds.	5,830 cu. yds.
Reinforcement steel	775,000 lbs.	465,000 lbs.
Steel piles	98,000 lin. ft.	7,200 lin. ft.
Borrow excavation	54,000 cu. yds.	12,000 cu. yds

Principal items of work for Contract No. 16 equal the sum of the quantities listed for Contracts Nos. 16A and 16B.

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey until 10:30 o'clock on the morning of March 28, 1950, and thereafter in the Veterans Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 A.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement of plan and equipment.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after March 8, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey and at the office of the Consulting Engineers, Howard, Needles, Tammen and Bergendoff, 55 Liberty Street, New York, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned. Plans showing grading cross sections may be examined at the office of the Authority or at the office of the Engineers.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a *certified check* drawn to the order of the New Jersey Turnpike Authority *and a proposal bond, each for not less than five (5) per cent of the amount of the proposal*, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the hour named. Where proposals are submitted for more than one contract, *each proposal* must be accompanied by a certified check and a proposal bond in the required amount. Bidders submitting proposals on any combination for Contracts 16, 16A or 16B are required to attach only one statement of plan and equipment. Copies of the proposal form to be used for submitting proposals, of the form for the proposal bond, of the form to be used for the financial statement and for the plan and equipment statement to be submitted with the proposal and of the special addressed envelope are furnished in detached form with the contract documents.

The Contracts will be awarded or the proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals.

THE NEW JERSEY TURNPIKE
AUTHORITY
Paul L. Troast
Chairman

March 7, 1950

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of

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Official Proposal Division

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Address: New York 18, N. Y.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2935) will be received by Bureau of Reclamation, Bismarck, North Dakota, April 6, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Voltaire-Rugby-Devils Lake-Carrington-Jamestown 115-kilovolt transmission lines, Transmission Division, North Dakota, Missouri River Basin Project. The work is situated between Voltaire, Devils Lake, and Jamestown, North Dakota. The work consists of approximately 219 miles of 3-phase, wood-pole, H-frame-type transmission lines with overhead ground wires. Time allowed for completion will be 200 days. For particulars, address Bureau of Reclamation, Bismarck, North Dakota; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(634)

Office of the District Engineer, Corps of Engineers, U. S. Army, 1217 U. S. Post Office and Custom House, St. Paul 1, Minnesota.—Sealed bids, in duplicate, for furnishing all labor and materials and performing all work required for Construction of Upper Guide Wall Extension at Lock and Dam No. 6, Mississippi River near Trempealeu, Wisconsin. will be received in this office until 11:00 A.M., C.S.T., 30 March 1950 and then publicly opened. Further information upon application. (631)

(Continued on page 77)

The CONTRACTOR—
like a GENERAL
Prepares for Victory

BEFORE he goes into battle on a new job he sees that his army of construction workers is *equipped*.

Looking over ENGINEERING NEWS-RECORD he sees, let us say, a new type of rubber-tired wheelbarrow. Looks into their success on other jobs—and orders them. He sees a crawler crane, which is particularly capable of setting steel—some of the big steel erectors are using many of them. He contracts for one to be delivered to the new job. New developments in wire rope—successful use of special cements—roofing plank or composition siding of light weight, speedily placed at low cost—and other elements that save him time and mony—are shown in picture and text.

Alert Contractors, who not only read the proposals for new jobs, but who follow the *news of the manufacturers* in the display advertising pages—get the most out of their ENGINEERING NEWS-RECORD. They are the men who are able to estimate a job close enough to "*land it*"—and who make money on the contract.

U. S. Government
(Continued from page 76)

Department of Commerce, Bureau of Public Roads, February 23, 1950. SEALED BIDS, will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 10:00 a.m., E.S.T., March 31, 1950, for Project 2A5B5, Shenandoah National Park, Warren County, Virginia. Length—12.346 miles. The approximate quantities of the more important items are 25,500 tons Type H-1 Asphalt Pavement, Liquefier Type, and 5,100 cu. yd. Furnishing and Placing Loamy Topsoil. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or Certified check made payable to the Treasurer of the United States, will be required to insure their return within 15 days after the opening of bids. Plans, Specifications and Proposal forms may be obtained at the address given above or Bureau of Public Roads, 410 State and City Office Building, Roanoke, Virginia. H. J. Spelman, Division Engineer.

(632)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2933) will be received by Bureau of Reclamation, Coulee Dam, Washington, March 30, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of extension of right switchyard for Grand Coulee Power Plant at Grand Coulee Dam, Columbia Basin Project, Washington. The work is situated at Coulee Dam, Washington. Principal items are approximately: 13,000 cu. yds., excavation; 1,000 cu. yds., concrete; erecting 195,000 lbs. structural steel for switchyard; and other work. Time allowed for completion will be 240 days. For particulars, address Bureau of Reclamation, Coulee Dam, Washington; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.

(633)

OFFICIAL PROPOSALS

(630)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NOS. 14, 14A and 14B

The work performed under these Contracts involves the construction of twenty piers, one abutment and their foundations for the South Approach, and twenty-five piers, one abutment and their foundations for the North Approach, and other incidental work in connection with the construction of the Passaic River Bridge which will form part of the New Jersey Turnpike, in the City of Newark, Essex County and in the Town of Kearny in Hudson County respectively.

Principal items of work for Contracts Nos. 14A and 14B include:

	Contract No. 14A	Contract No. 14B
Construction roads..	36,000 cu.yds.	65,000 cu.yds.
Open foundation excavation....	13,000 cu.yds.	17,500 cu.yds.
Furnishing steel piles...	6,000,000 lbs.	14,700,000 lbs.
Driving steel piles.	72,500 lin.ft.	187,000 lin.ft.
Pile coating..........	34,400 lin.ft.	5,100 lin.ft.
Concrete encasement of steel piles............	2,200 lin ft.	....
Concrete in pile caps, piers and abutment...	13,910 cu.yds.	21,810 cu.yds
Reinforcement steel....	1,500,000 lbs.	2,100,000 lbs.
Protection of railroad traffic............	lump sum	lump sum
Protection of public service property.........	lump sum	....

Principal items of work for Contract No. 14 equals the sum of the quantities listed for Contracts Nos. 14A and 14B.

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock on the morning of March 23, 1950, and thereafter in the Veterans Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey until 11.00 A.M. on the same

date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plan and equipment. Contract documents may be seen, and may be inspected by prospective bidders during office hours, after March 2, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Engineers, Ammann and Whitney, 210 Market Street, Newark, New Jersey, or 76 Ninth Avenue, New York 11, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and Contract documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for construction of the New Jersey Turnpike, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside, and must be accompanied by a *certified check* drawn to the order of the New Jersey Turnpike Authority *and a proposal bond, each for not less than five (5) percent of the amount of the proposal,* but not less than $500.00 nor more than $200,000.00, and must be delivered with proposals at the above place on or before the hour named. Where proposals are submitted for more than one contract, *each proposal* must be accompanied by a certified check and a proposal bond in the required amount. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond, of the form to be used for financial statement and plan and equipment statement to be submitted with proposal, and of special addressed envelope are furnished in detached form with the Contract Documents. Bidders submitting proposals on combination of Contracts Nos. 14A and 14B are required to submit only *one* statement of plan and equipment.

The Contracts will be awarded or proposals rejected within thirty (30) days from

the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

March 2, 1950

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Official Proposal Division

ENGINEERING NEWS RECORD

Address: New York 18, N. Y.

Bids: March 29, 1950 (629)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63 Laws of 1936, as amended, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on March 29, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT NO. 4 A. R. Mulligan, Dist. Engr., Barge Canal Terminal, Rochester, N. Y.				
Monroe	LOSP 50-1P	Lake Ontario State Parkway, Sect A	4 36	8" Cem. Conc. Pavt. 2 at 24' Wide; Altering Existing 36'4" Rigid Frame	$58,000 Plans $20	$1,061,000
		DISTRICT NO. 6 H. F. Brumm, Dist. Engr., 30 West Main St., Hornell, N. Y.				
Steuben	PSC 9418	Elimination of Grade Crossings of the Erie R. R. and The D. L. & W. R. R., with various Streets and the N. Y. C. R. R. in the City of Corning	8 20	Relocating R. R. Tracks; Paving Streets With Cement Conc. Pavt. and Asphalt Conc. Opt., Including 20 R. R. Bridge Structures; 3 Pedestrian Subways; 2 Highway Bridge Structures and Incidental Drainage and Misc. Work	$500,000 Plans $100	$8,707,155
		DISTRICT NO. 8 J. S. Bixby, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Columbia	RC50-8	9087 Hudson-Brick Tavern Ghent	0.44	8" Cement Concrete Pavt. 24' Wide. Alpha I-Beam 5 Spans 50'-3" Each. Alpha = $406.	$13,000 Plans $5	$238,000
Westchester	SH 50-2	Port Chester Village: Hillside Ave. & Connection to S. H. 5662	0.10	Asph. Conc. Opt. on Conc. Foundation	$1,600 Plans $5	$30,000

Proposal for each contract must be submitted in a separate sealed enevelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

SALES MANAGER

Internationally known engineering and building firm specializing in Industrial Plant work, with main offices in the Midwest, offers a splendid opportunity for an exceptionally experienced Sales Executive.

The applicant chosen will coordinate all sales efforts for the company. Duties will involve development of new prospects and maintenance of superior sales relations with customers.

Applicants must be a proven organizer, administrator and should have design and construction experience on industrial plants as well as sales experience.

If you have qualifications fitting these requirements please mail a complete confidential resume, stating your past experience, education and salary requirements.

P-2470, Engineering News Record
330 W. 42nd St., New York 18, N. Y.

SALESMAN

Need top flight shovel and crane salesman who can produce in Metropolitan New York area. Will sell one of leading lines. Applicant must state experience, record, age and remuneration expected, in detailed resume for consideration. Our Sales Force has been notified of this ad. All replies held in strict confidence.

SW-2378, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

CENTRIFUGAL PUMP DESIGNER

Manufacturer of nationally accepted line of centrifugal pumping machinery requires the services of an experienced pump designer. Thorough knowledge of hydraulics essential. Midwestern location. In reply submit full particulars: age, education, experience and salary required.

P-2455, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED SUPERINTENDENT

for sewage and waterworks by old and well-established firm, operating principally in Indiana, but planning expansion. Write only for interview. State age, experience, qualifications, reference and salary expected.

P-2548, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

CONSTRUCTION SUPERINTENDENT

to become permanent part of established building contractors organization. Give references, outline of experience, salary expected and snapshot.

MILLER-DAVIS CO
1287 Portage St. Kalamazoo, Michigan

WANTED
BRIDGE DESIGNERS, DESIGNER DRAFTSMEN, RESIDENT HIGHWAY ENGINEERS, SOILS ENGINEER

Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.

P-2412, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

COST ENGINEER

Responsible position available in Midwest Office of nationally known engineering and building firm for Cost Engineer with several years field experience and actual knowledge of current construction costs for all types building and industrial process work. Good salary and opportunity for the qualified applicant.

Send detailed summary of experience and education together with statement regarding salary requirement and date available. All replies strictly confidential.

P-2471, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED

SUPERINTENDENT

thoroughly experienced in all phases of bridge construction—By established Contractor in the Southwest. Give references, experience record and salary expected.

P-2503, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

CIVIL SERVICE

SEWER DESIGN Engineers. At least four years of graduate civil engineering experience with experience on municipal sewer systems preferred. For work on extensive sewer survey and design projects with the City of Dayton. Registered in the State of Ohio or eligible for such registration. Starting salary $3600 to $5000, depending on qualifications. Apply with full details and photograph to Personnel Supervisor, Municipal Building, Dayton, Ohio.

WANTED ARCHITECT with building construction experience or an architectural engineer to advise in preparation of plans, review drawings, supervise construction, etc., under Hill-Burton Act. State experience, age and salary required. Address: The Commissioner, Tennessee Department of Public Health, 426 Sixth Avenue North, Nashville, Tenn.

POSITIONS VACANT

EXECUTIVE TYPE Engineer by large Wisconsin contractor. Must be able to prepare estimates, close contracts and complete the jobs within the estimates. Company has been established over 50 years and wishes to expand. Sufficient capital available. Specialize in commercial, industrial and public work. Exceptional opportunity for an aggressive young man to establish himself permanently. Should not be much over 40 years old. Reply at once giving age, education and experience. Confidential. Reply P-2422, Engineering News-Record.

CIVIL ENGINEER wanted for a responsible permanent position with a large public utility located in eastern Pennsylvania. Must have a broad experience, a substantial portion of which has been in hydraulics. The position presents an excellent opportunity to the right man. Apply by letter stating age, education, detailed experience and salary requirements. P-2480, Engineering News-Record.

WANTED MECHANICAL Engineer, age 35 to 45, should have had at least ten years experience in material handling, preferably in hoisting equipment field, also should have supervisary ability. Write full qualifications and salary requirements. P-2372, Engineering News-Record.

TRANSITMAN WHO is able to do computing or drafting. Location near New York City. P-2481, Engineering News-Record.

EXPERIENCED DESIGNERS, detailers, steel and concrete bridges or buildings in New York City. Send experience resume. P-1359, Engineering News-Record.

WANTED CONSTRUCTION Superintendent to take charge of Project in Metropolitan Area. Must be qualified to supervise structural, architectural and mechanical installations and utilities. Reply P-2443, Engineering News-Record.

REINFORCING STEEL . . . are you about 30 years old and have worked for a Bar Company? If so, would you like to become identified with a going concern about 100 miles from New York . . . have good proposition for right man. P-2450, Engineering News-Record.

TECHNICAL SALES REPRESENTATIVE

Large Midwest marketer of asphalt desires technical sales representative under 40, preferably 25-35, with engineering education and experience in application of asphalt for industrial uses as well as road building. State qualifications and starting salary in reply.

RW-2425, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

POSITION VACANT

CIVIL ENGINEER experienced in field control of concrete and bituminous concrete, good opportunity, permanent. Write full qualifications. P-6007, Engineering News-Record

WANTED — CONSTRUCTION Superintendent with proven record to handle multi-unit housing, industrial and commercial building. Must be qualified to handle and organize projects in $1,000,000.00 class. In reply, give full qualifications, references, salary expected and availability. P-2397, Engineering News-Record.

STAFF MATERIALS and Research Eng. $556. Valid Calif. C. E. License or Eligibility and 5 yrs. Recent Exper. Responsible Charge Testing Construction Materials. Write By April 22, Recruitment Section, Dep't B, 1015 L Street, Sacramento, Calif.

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PROMINENT MANUFACTURER of centrifugal pumps desires to receive applications from manufacturers' Agencies capable of giving aggressive sales representation to an extensive line, well cataloged and complete (does not include boiler feeders). Open territories are: Bangor, Charlotte, Cincinnati, Columbus, Des Moines, Harrisburg, Helena, Jacksonville, Little Rock, Memphis, Milwaukee, Norfolk, Peoria, Reno, Richmond, Scranton, Springfield, Mass., Toledo, Wichita, Wilmington, Del., Youngstown. Reply to RW-2440, Engineering News-Record.

DISTRICT MANAGER to travel Middle Western States selling water works utilities. Must be willing to travel extensively. Permanent position with salary and expenses. Give full details, past experience and salary expected. Our men know of this advertisement. SW-2441, Engineering News-Record.

SALESMAN. Heavy Hardware — Waterfront Construction. State experience, salary desired and references. SW-6002, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1927, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

MASTER MECHANIC, Equipment Supt., Mechanical Operating Engineer, over twenty-five years' experience with erection, repair and maintenance of heavy industrial equipment, power house, pumping stations and marine equipment, etc. available immediately. Go anywhere. PW-2305, Engineering News-Record.

ESTIMATOR, WIDE experience all types buildings, concrete and masonry structures, wants new connection with an established General Contractor. Business management and engineering background. Now located Washington, D. C. Thirty years experience in construction as Superintendent, Estimator and Engineer. Prefer smaller company not loaded with unproductive overhead where a thorough knowledge of construction will pay dividends. PW-2341, Engineering News-Record.

MASTER MECHANIC, equipment superintendent or shop foreman, age 41, experienced supervisor of maintenance, repair and operation of all makes of heavy equipment, excellent references as to ability, location immaterial. PW-2376, Engineering News-Record.

GENERAL SUPERINTENDENT — 50 — A-1 executive always in top salary bracket. Former employers will say worth it. 25 years responsible charge major buildings and heavy construction. College graduate. Address PW-2403, Engineering News-Record.

(Continued on page 79)

POSITIONS WANTED

(Continued from page 78)

CIVIL ENGINEER PROFESSOR PE & LS. Available June thru September 1950. Primarily interested in highway, building construction, office or field work. Location North Atlantic States. PW-2504, Engineering News-Record.

HIGHWAY ENGINEER. Seventeen years responsible experience in construction and maintenance including earthwork, rigid and flexible pavements, structures and sewers. Graduate civil engineer now employed as senior engineer by municipality. Desire responsible opportunity with consultant, contractor or public road authority. PW-2518, Engineering News-Record.

B.S., M.S., age 39, varied design and field experience, structures. Well-acquainted with S. America: Chile, Colombia; also continent, particularly Spain. Tolerably French; good Spanish. Seeks employment with engineering organization active outside of States. SW-6002, Engineering News-Record.

CIVIL ENGINEER, Project Manager. Graduate, Wisconsin Registration. Age 43. 12 years excellent experience-construction, maintenance and administration. Capable of assuming full charge. PW-2506, Engineering News-Record.

PROJECT MANAGER-General Superintendent. 25 years experience all types of construction. Hospitals; schools; office buildings; factories; docks; new and alteration work. Capable of organizing and coordinating entire project/projects. Splendid record for speed and quality of work. Held in high regard by all architects and owners of all projects. Available immediately. PW-2415, Engineering News-Record.

CONSTRUCTION SUPT. 51, married, 28 years supervising paving, bridges, dams, power plants, sewage disposal, water treatment plants and flood control projects. Midwest and Eastern contractors. Base salary $9000.00. PW-2366, Engineering News-Record.

GRADUATE CIVIL Engineer—Desire Position as field superintendent or asst.—3 years experience in building construction, estimating, cost work, purchasing, planning and coordination of subs. Location immaterial. PW-2375, Engineering News-Record.

WELL DRILL Foreman domestican and foreign experience in water supply development, blast holes etc. Age 44. PW-6006, Engineering News-Record.

DIAMOND CORE Driller with dry sampling experience desires foreign assignment. PW-2379, Engineering News-Record.

ADMINISTRATIVE ASSISTANT — 33 — 2½ years assistant service manager gas and diesel powered construction equipment. Heavy detail. Experienced expediting, parts and equipment inventories, costs, preventitive maintenance and shop management. PW-6003, Engineering News-Record.

SANITARY ENGINEER, M.C.E., age 28, married, experienced in design of water and sewage treatment plants, desires position with state, county, or municipal body engaged in sanitary or public health engineering work. Will relocate. Available April 1st. PW-6005, Engineering News-Record.

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C.E. 36. Varied exp. in all phases of cons't. Field and office. 5 yrs. super. exp. Write Engineer, 140 Christoper St., N. Y. 14, N. Y.

WANTED:

FOREIGN POSITION

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PW-6001, Engineering News-Record
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PW-2393, Engineering News-Record
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CONSTRUCTION ACCOUNTANT, 25 yrs. experience all phases building construction. General and cost accounting. Will relocate. PW-2424, Engineering News-Record.

PROFESSIONAL ENGINEER, 33, Mechanical plus social science background; experienced in surveys, reports. Part-full time. PW-2423, Engineering News-Record.

CIVIL ENGINEER with M.S. degree in structural engineering from a well recognized University. One year's experience in design and construction work. Age 25. Single, available very soon. PW-2413, Engineering News-Record.

GRADUATE CIVIL Engineer; 28; married; three years experience with contractor and engineer desires permanent position with a contractor. Prefer mid-west location. PW-2438, Engineering News-Record, 520 N. Michigan Ave., Chicago 11, Ill.

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STRUCTURAL DESIGNING—Steel and concrete buildings, structures, foundations. Wide experience. Complete service. Satisfaction guaranteed. PTWW-2315. Engineering News-Record.

SELLING OPPORTUNITY WANTED

OWNER'S REPRESENTATIVE. Guarantee that contractor completely comply with owner's requirements. Over 15 years experience; including Construction Superintendent with reputable contractors and major industries. RA-2374, Engineering News-Record.

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Patent Practice

before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 454, 815-15th Street, N. W., Washington 5, D. C.

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⅜ or ½ Yd Shovel with or without attachments. Also Backhoe for ½ yd. Unit Model 514. Send Serial No., year of mfg., price, and condition.

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Trenching Machines

Parsons Models 250-310
Buckeye Models 120-160-410
Austin Models 600-700-900

W-2367, Engineering News-Record
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Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

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12" DREDGE

Portable pontoon type hull. Capacity 150 c. y. fine sand per hour. 18 Ft. digging depth. Diesel power.

W-2444, Engineering News-Record
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USED MODEL 80 CATERPILLAR SCRAPERS

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on premises of

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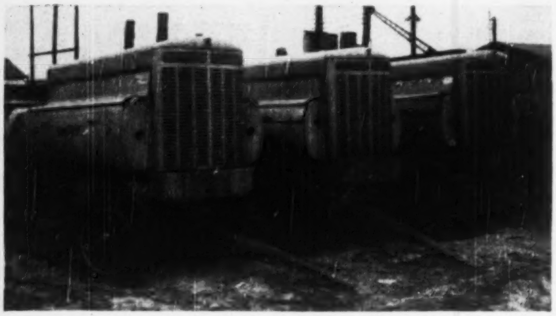
Oregon Ave. & Swanson St., Philadelphia

MONDAY, MARCH 27 AT 12 NOON



5 Sullivan 500 cu. ft. and 2 Sullivan Joy 630 cu. ft. portable compressors—air cooled units of 2-stage design powered by Hercules 6-cylinder Diesel engines. Models 500 deliver 500 cfm of free air at 100 lbs. pressure and Models 630 deliver 630 cfm of free air at 100 lbs. pressure. Each compressor is mounted on an all steel frame equipped with 4 pneumatic tires. Class Wk-80.

These Machines are of recent purchase and were used for 7 months before being replaced with large stationary compressors. New cost price $10,000. and $11,000. each. Each compressor will be sold to the highest bidder.

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1	with Baker Blade	$3500.00
1	D-4 Caterpillar with Bulldozer Blade	$3000.00
1	Little Ford Driveway Roller	$750.00
1	Ingram 10 Ton Roller	$1800.00
1	Ingersoll Rand. 110 Compressor on Federal Truck	$650.00

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ONE JAQUES EARTH BORING MACHINE

Model HM with Turntable mounted on GMC 6'x6' all wheel drive. Truck also equipped with 15,000 lb. Tulsa Winch and Headache Rack as well as special steel body built for this machine. Equipment purchased new September 1948, used 4 months. Excellent condition.

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6—Caterpillar Bulldozers model D8
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2—Caterpillar Tractors with 10' blade
1—Power Shovel 1½ Cu. Yd. P. & H. model 655A
2—Buffalo Gas Rollers 12 Ton
2—Scrapers, LeTourneau
1—Bay City Shovel ½ Cu. Yard
2—Graders, Caterpillar
1—Rooter, LeTourneau, Heavy Duty
1—Roller, Buffalo Springfield 10-12 Ton
1—Hobart Welding Outfit
1—Auto Car Dual Drive Tractor
1—Diesel Compressor =315 Chicago Pneumatic
1—Wagon Drill model 200 Chicago Pneumatic
2—Mack Dump Trucks 10 Yards model LJ 1949

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(Classified Advertising)

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Marion 1-yd. diesel powered heavy duty truck crane on heavily reinforced Mack.
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P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 30B tunnel front attachment.
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¾-yd Lorain, 40, LBS#6105. 44″ cutting width, teeth, sheave.
27″ outside width drop bottom type LBS #1033, good condition.
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Lorain 30 hoe attachment.

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McCaffrey Model 636 for ¾-yd to 1-yd crane.

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Lorain 75 manganese 1¼-yd, LBS #7233, teeth and bail.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS #2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS #5763.

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Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
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Pennsylvania 12″ x 10″ class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
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1½-ton Ford & Chevrolet.
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27E Koehring Paver.
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Jaeger type "L" double screed, 10½′-12½′, rebuilt.
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2 Koehring 10′-12′, rebuilt.
Koehring 10′-16′ finisher, rebuilt.

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Blaw-Knox type SA 10′-15′ spreader, new 1943. New condition.

Concrete Road Forms

830′—Truscon 7″x8″ forms, with stakes.
1380′—Heltzel 7″x8″ forms, with stakes.
1300′—Blaw-Knox 8″x8″ forms, with stakes.
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International TD-9 with Bucyrus-Erie angledozer.
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1—Adams Patrol Grader, Model 411 Diesel	$ 4,500
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1—Silent Hoist Krane Kars, Model AX-5 ton	$ 4,000
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2—Towmotor 5 ton LT 72 Fork Trucks	$ 2,250
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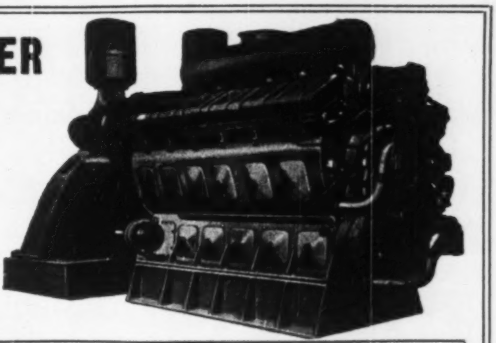

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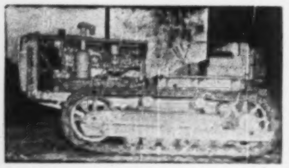

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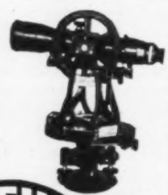

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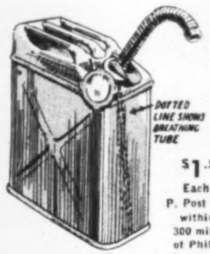
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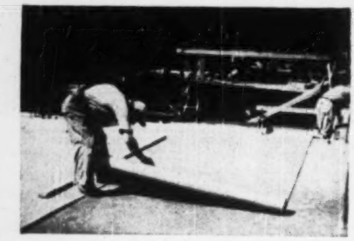

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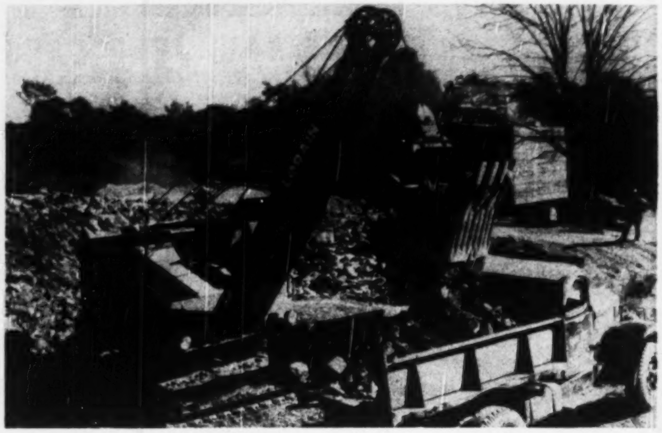

Crane Features Basic Units

Turntable design of the Thew-Lorain TL-25 is such that it is comprised of several major components, each built as an integral unit, complete with all subassemblies and parts installed. They may be removed and replaced with new complete assemblies, either temporarily to keep the machine going or as replacement units. Interchangeable front-end boom equipment is provided covering: Shovel boom with one-piece dipper stick and ¾-yd dipper; crane boom in two sections and suitable center sections and tip extensions for lengthening the boom; and special features for standard lifting cranes. Fifteen mountings are available including three crawler and 12 rubber-tired.—THE THEW SHOVEL CO., LORAIN, OHIO

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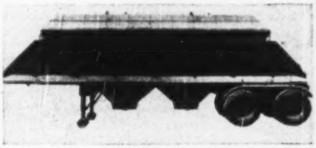
Second-story-level painting is simplified by use of a new-type extension spray gun. The Eclipse guns are offered in lengths from 4 to 12 ft, in 2-ft intervals. A 360-deg-nozzle attachment permits remote-control spraying of inside of pipe and conduit. The guns accommodate any sprayable fluid from light paints to heavy asphaltic compounds.—ECLIPSE AIR BRUSH CO., 390 PARK AVE., NEWARK 7, N. J.



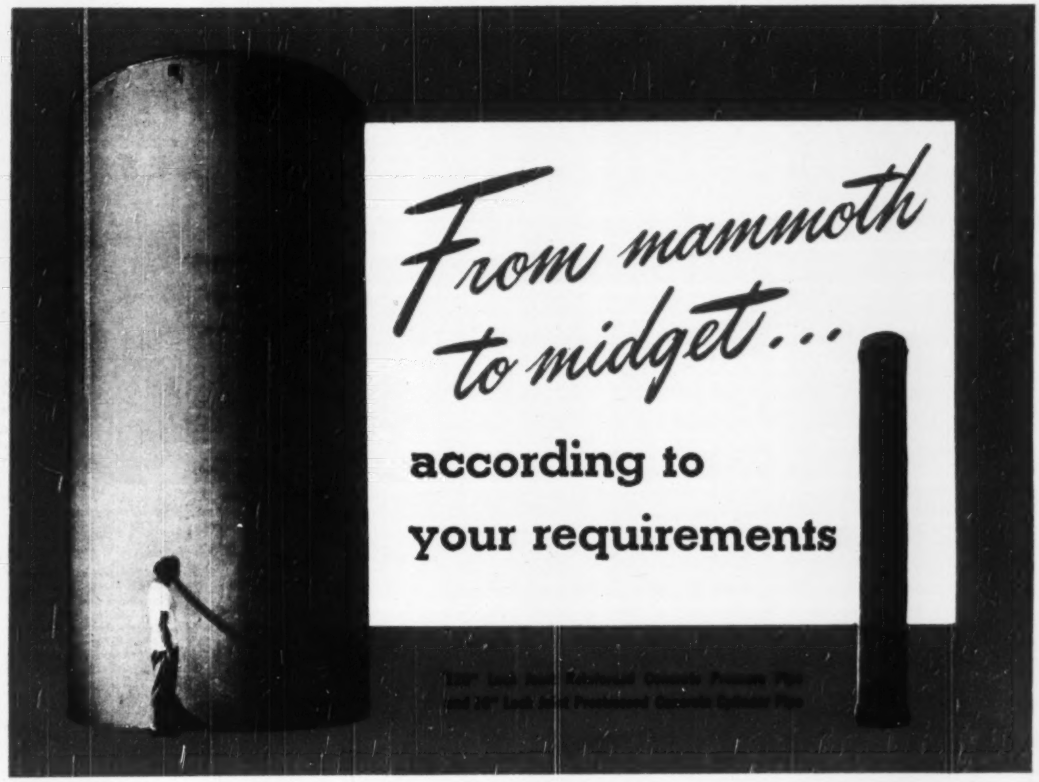
Bottom-Hopper Dump Trailer

Trailer is designed for bulk handling of granular and powdered materials having high angles of repose. It loads through manhole openings that are weatherproof when closed and discharges its load by gravity at controllable speed through hoppers in the bottom. Gross capacity is 820 cu ft, with individual modifications to meet specific needs. Dimensions: Nominal length, 29 ft; width, 96 in.; over-all height with 10.00—20 tires, 10 ft 6 in.; and net weight, 11,080 lb. — GRAMM TRAILER CO., DELPHOS, OHIO.

Hollow-Core Flush-Type Door

New principle of construction is feature of Kennebec truss doors. Of the hollow-core flush type, the door incorporates four sturdy wires within the frame that bear all twisting and warping stresses. Manufacturer claims that this construction prevents doors from warping even under extreme conditions of heat, moisture, and rough use, and, if necessary, the truss door can be adjusted to conform to misalign-

(*Continued on page 91*)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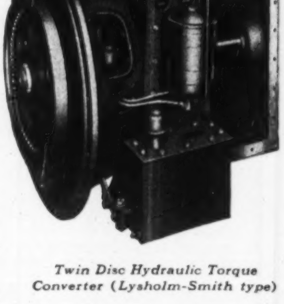
For complete information on these *smoother-than-steam* hydraulic power transmission units, write for Twin Disc Hydraulic Torque Converter Bulletin 135-C. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division, Rockford, Illinois).



Twin Disc Hydraulic Torque Converter (Lysholm-Smith type)

Model 3900 Manitowoc Speedcrane, powered with a Hercules HXE engine and equipped with a Twin Disc Torque Converter, erecting steel beams for the Terminal Island express highway bridge in southern California. Beam weighs approximately 44,000 lbs.

Steel contractors prefer Twin Disc Torque Converter-equipped lift cranes.

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ments which might occur in buildings after door is installed. Face veneer is Maine birch.—KENNEBEC, INC., TRUSS DOOR DIV., BINGHAM, ME.

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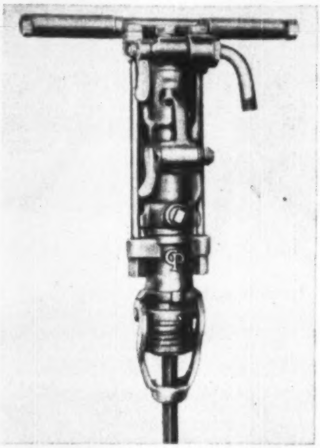

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High drilling speed, rotation power, and hole-cleaning ability are features of the CP-59 sinker drill. This drill, in the 55-lb class, will drill holes up to 25 ft. With the new 4-in-1 backhead, changeovers to either plain dry, blower dry, wet, or air-water operation are quickly made by removing a plug and changing water or air-valve assemblies. Other features include highly efficient lubrication system, replaceable bronze chuck nut, and cylinder bushing liner.—CHICAGO PNEUMATIC TOOL CO., 6 E. 44TH ST., NEW YORK 17, N. Y.

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(*Continued on next page*)

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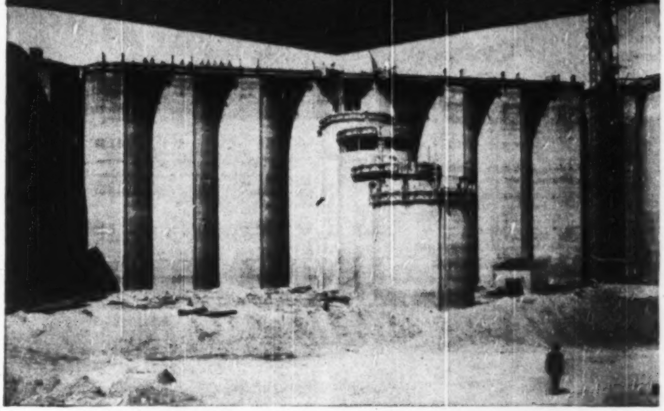

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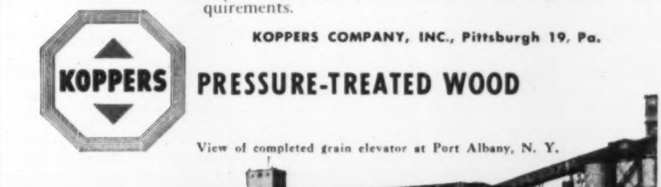
View of completed grain elevator at Port Albany, N. Y.



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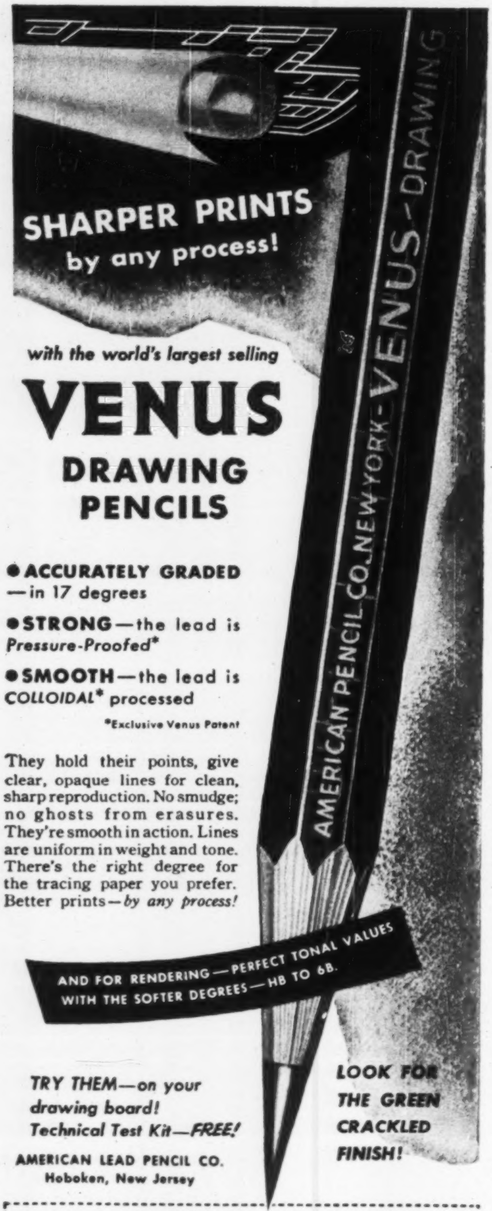
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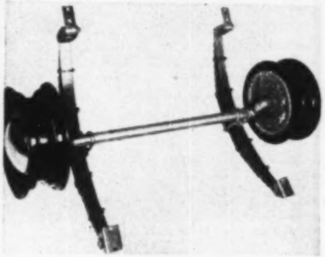
ties range to 300 tons per hour at speeds to 300 fpm.—Hewitt-Robins, Inc., 370 Lexington Ave., New York 17, N. Y.

Clutch Coupling

Designed to accommodate any shaft from $\frac{3}{4}$ to $1\frac{3}{4}$-in. dia. (in $\frac{1}{16}$-in. increments) with standard keys, the Rawson clutch couplings are adjustable on the job. They are complete packaged units ready for use with motors from 0.43 hp. at 580 rpm. to 25.6 hp. at 1,800 rpm. Coupling consists of two sections—a motor half and a driven half. Split taper-bushing wedges the tapered coupling hub tightly, always assuring a perfect fit to the shaft.—Centric Clutch Co., 22-26 South Ave. W., Cranford, N. J.



Undercarriage Assembly

Construction of utility trailers is simplified by use of complete undercarriage assemblies. The standard assembly includes: Tru-Camber 4-in. drop-center tubular axle equipped with drop-forge spindles; two Glide-Ride springs complete with rubber-mounted hangers and spring shackles; two hub-and-drum assemblies of the standard 15 or 16-in. automotive type; and a Warner or Empire electric-brake assembly. Capacities range to 6,000 lb. For heavier loads, spring specifications can be changed, or a tandem 4-wheel assembly adopted.—Fayette Mfg. Co., Fayette, Ohio.

Heating Calculator

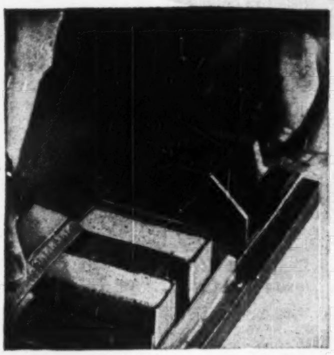
Calculating dial measures radiation of steam and hot-water heating systems. The Heat-O-Meter lists sizes, capacities, and minimum and maximum heights for both old and new styles of radiators, mains, return, risers, chimneys, round and sectional boilers, and other equipment. The correct amount of radiation is easily determined by turning a dial. No previous technical training is necessary.—Heat-O-Meter Co., 424 W. 42nd St., New York 18, N. Y.

Gasoline Power Units

These 4-cylinder gasoline power units are designed for high-speed

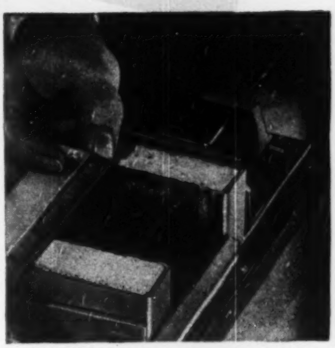
(Continued on page 94)

We S-T-R-E-T-C-H-E-D *a point...*



Flintseal is poured between cement mortar blocks for testing.

Blocks are extended ⅛ inch per hour.



Extended double to 3 inches, Flintseal maintains perfect bond.

... to PROVE *one!*

• *They keep getting bigger! The Consolidated-Vultee B-36 can carry an atom bomb anywhere in the world and return. Sky giants like this must have heavy runways. Flintseal Joint-Sealing Compound increases service life, reduces maintenance cost and seals joints positively.*

• *With more traffic than ever before on our highways, maintenance becomes even more important. Flintseal helps cut maintenance to the bone, because its bond remains firm and tight through repeated cycles of expansion and contraction.*

*T. M. Reg. U. S. Pat. Off.
Manufactured by The Flintkote Company

It happened like this.

We were demonstrating the extensibility of Flintseal* Joint-sealing Compound as required by Federal Specification SS-F-336a . . . (5 cycles of extension from 1 to 1½ inches at 0° F. and recompression at room temperature).

Then, showing what Flintseal would really do, we extended to 3 inches. Three times its original width instead of half again as wide.

And the bond of Flintseal to the test blocks remained as firm as ever!

We admit that's stretching a point. Joint-sealing Compound probably would never be called on to perform like that. But isn't it a comfort to know that materials you use have that *additional* factor of adhesion and safety?

You get that and more with Flintseal. It's a *rubber-bearing, thermoplastic* joint-sealing compound especially developed by Flintkote to give you four important advantages:

1. Seals joints effectively against infiltration of moisture and other foreign matter through repeated cycles of expansion and contraction of concrete slabs.

2. Adheres firmly to concrete . . . without use of primers. Remains extensible and compressible.

3. Maintains resilience . . . does not become brittle and crack in coldest weather, nor will it flow in hottest weather.

4. Can be melted and applied quickly and easily in equipment especially designed to permit safe, economical handling.

For full details and application data on Flintseal, write today.

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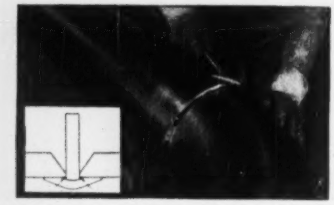
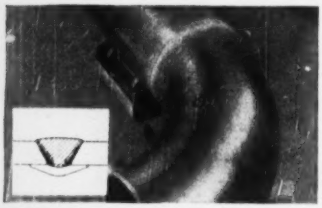
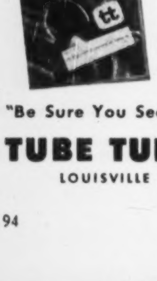
Ring snaps easily into place. Knock-off spacer pins space and center the pipe accurately and automatically.



Tacking completed, spacer pins are knocked off and the welder finishes his joint. Insert shows cross-section of ring and joint.



The finished job . . . a perfectly welded joint. Irregular black area (see insert) indicates greater width of fusion zone obtained with Tube-Turn welding ring.



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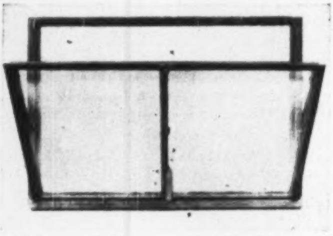
heavy-duty service. The JX4E has a 3½-in. bore, 4¼-in. stroke, and 164-in. displacement; the JX4E, a 3¾-in. bore, 4¼-in. stroke, and 188-in. displacement; the JX4D, a 4-in. bore, 4¼-in. stroke, and 214-in. displacement. Crankshaft is counterbalanced for vibrationless operation and to reduce bearing loads. Full-length water jackets provide cooling for each cylinder.—HERCULES MOTORS CORP., CANTON, OHIO.

Crushing, Screening Plant

Hawkeye series of Cedarapids crushing and screening plants produce low-cost gravel for road maintenance and small concrete construction jobs. This lightweight plant is 100-percent portable, with nothing to set up or take down when transporting. The plant produces between 50 and 75 tons of accurately sized material per hour. It consists of standard Cedarapids parts including hopper, feeder, feed conveyor, horizontal vibrating screen, bucket elevator and return conveyor, sand and delivery conveyor, and choice of four sizes of plain or roller-bearing jaw crushers.—IOWA MFG. CO., CEDAR RAPIDS, IOWA.



Packaged Basement Window

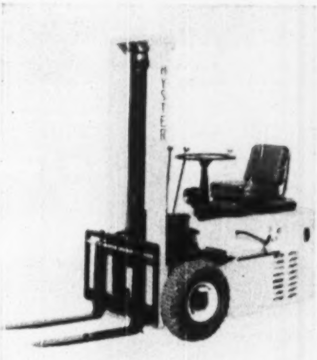
Field glazing is eliminated by use of packaged basement window consisting of a full-glazed window, screen, and storm-sash insert. The window has complete double-contact weathering, and is completely machined for screens and vertical mullions. Open-in vent opens from the top; the locking device is positive and trouble free. Window is available unglazed and unpackaged.—DETROIT STEEL PRODUCTS CO., 3141 GRIFFIN ST., DETROIT 11, MICH.

Poison-Ivy Preventive

Highway maintenance crews and utility company employees will be interested in an effective means of combating poison ivy and poison oak which has just been announced. Application of the Ply liquid before starting work is said to provide from 6 to 8 hours of protection. The greaseless liquid is quickly removed by washing with soap and water.—THE MILBURN CO., 3246 E. WOODBRIDGE ST., DETROIT 7, MICH.

Traction-Type Dynamometers

High-capacity dynamometer is available in three sizes—30,000, 40,000, and 50,000 lb. They can be used for checking draw-bar pull, weight of bulky objects, tension in ropes or cables, static loads, and similar operations. The Model AN line have 10-in.-dia. dials. They are suitable for indoor or outdoor use.—W. C. DILLON & CO., INC., 5410 W. HARRISON ST., CHICAGO 44, ILL.

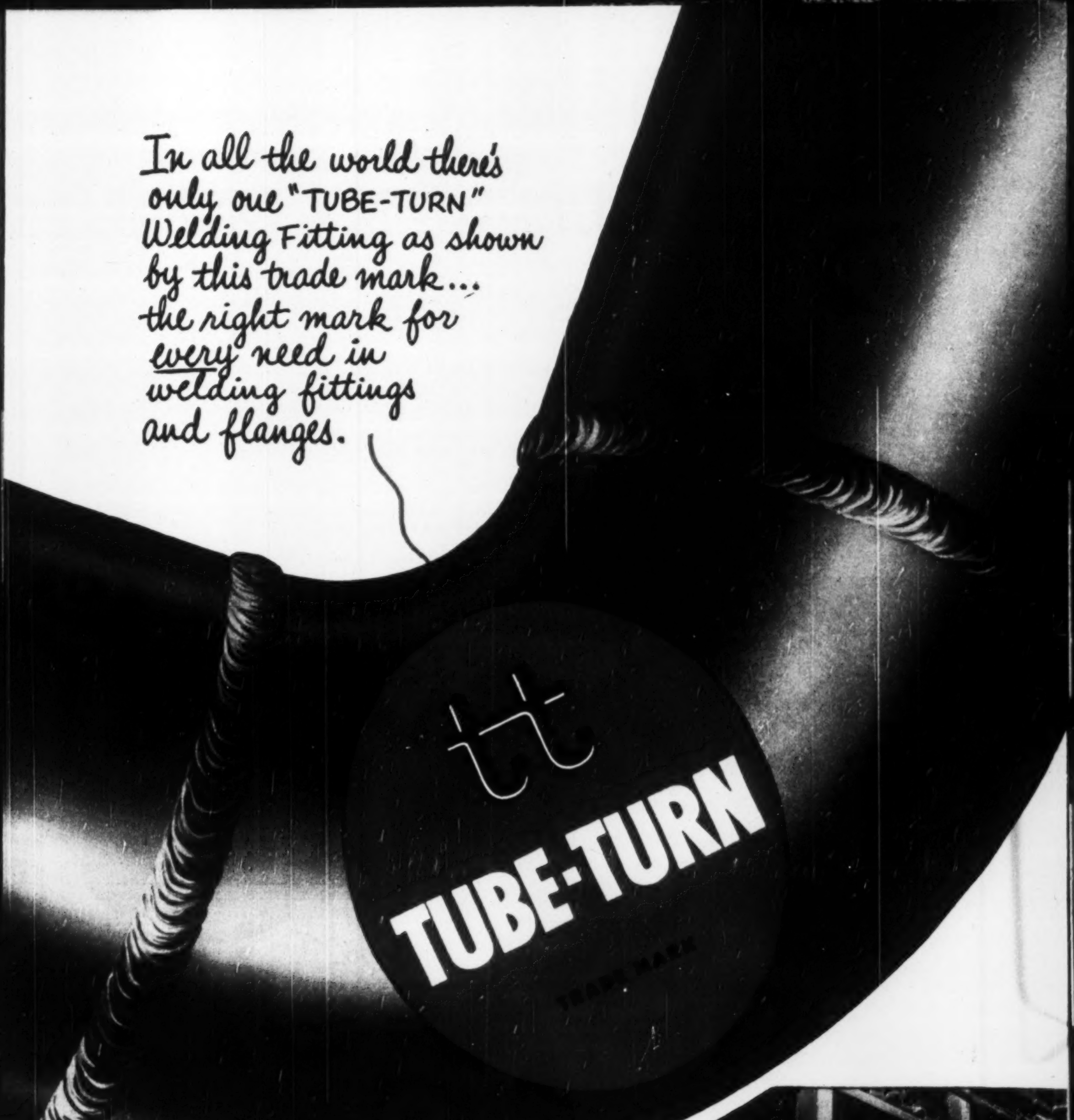


One-Ton Lift Truck

Model 20 lift truck is powered by a Wisconsin gasoline engine and has a lifting capacity of 2,000 lb. Improved, larger clutch provides smoother control and longer life. Uprights are mounted on an extension of the truck frame and are designed to pivot forward to the floor in such a manner as to lift the front wheels clear of the ground for changing tires or servicing power unit. Tilt control is accomplished through double-acting hydraulic cylinders. Features include: Easier steering, better braking power, lug-type pneumatic tires, and increased operator comfort.—HYSTER CO., 2953 N. E. CLACKAMAS, PORTLAND 8, ORE.

Upset-Forged Roller Shafts

Production of roller shafts by upset forging is said to result in better grain structure in the metal and a stronger shaft. The Bulldog shafts for Caterpillar D-8 tractors are made of special precision steel, heat-treated on all bearing surfaces, and machined and ground to extra-close tolerances.—ALLIED STEEL PRODUCTS, INC., 7835 BROADWAY, CLEVELAND 5, OHIO.



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2. CARBIDE INSERT

Under certain conditions — including extremely hard and abrasive ground, small holes, and unusually deep holes — Timken carbide insert bits frequently offer many advantages that may more than make up for its extra unit cost. Drillers change bits less often. Holes go down faster. Reconditioning is simplified. Timken carbide insert bits are available in 4 series, in a variety of shapes and sizes.

3. ONE-USE SPIRALOCK

Designed for use where reconditioning is impractical or undesirable, Timken one-use "Spiralock" bits offer lowest unit bit cost. New "Spiralock" union simplifies steel preparation, makes steels last longer, holds bit on dependably yet permits easy removal. Has crowned chisel pilot for easy collaring, fast penetration. Two series in a variety of sizes.

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Manufacturers' Publications

Diesel Engines for Construction – Specifications on a complete line of diesel engines are included in an informative booklet. Form 12679, prepared especially for the construction industry, discusses power requirements for excavators, compressors, electric equipment, pumps, ditchers, rollers, and movable forms. — CATERPILLAR TRACTOR CO., PEORIA 8, ILL.

Vibrating Screens–Selection guide for vibrating screens lists types for every sizing and scalping operation. Bulletin 50 contains a section of photographs and working information on screen sizes, production capacity, and service for handling sand, gravel, stone, and hot-mix asphalt. Another section explains mechanical features of Deister screens and illustrates the high-capacity elliptical-throw principle embodied. —DEISTER MACHINE CO., FORT WAYNE, IND.

Fenestration–New ideas in fenestration are presented in 4-p folder describing Insulux prismatic glass blocks. The bulletin illustrates several types of Insulux fenestration and contains schematic drawings illustrating the passage of light through the Insulux blocks. Featured in the catalog is a description of how one unit combines the advantages of light-directional glass block and conventional double-hung windows. Drawings are used to show typical installation details.—AMERICAN STRUCTURAL PRODUCTS CO., TOLEDO 1, OHIO.

Welding Wall Chart – Large chart (2x3 ft) lists more than 100 EutecRods and EutecTrodes with standard sizes. Technical data provided for each rod include: Type of joint for which suitable, metal on which used, bonding temperature, tensile strength, Brinnell hardness, degree of color match, electrical conductivity, resistance to corrosion, and flame adjustment. A section of the chart is devoted to a discussion of the 33 most important Eutectic alloys and their properties. Check list covers nearly 300 operations, with listing of rod or rods recommended for each application. — EUTECTIC WELDING ALLOYS CORP., 40 WORTH ST., NEW YORK 13, N. Y.

Pipe and Conduit Tools–Porto-Power equipment for installing pipe and conduit are described in 4-p. folder.

(*Continued on next page*)

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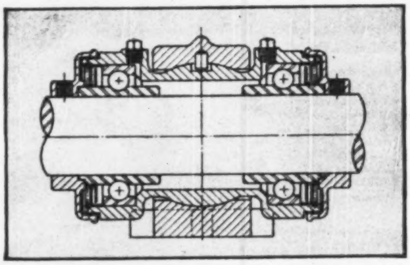

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Learning to Lift—Safety guide for workers discusses basic essentials of safe lifting, including eight specific pointers on safe lifting practices. It is popularly written and amusingly illustrated. Limited supply of free copies are available. Quantities may be purchased at 10¢ each or $5 per 100.—SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON 25, D. C.

Bridge-Flooring System — Technical bulletin (4 pp) describes structural-plate steel bridge-flooring system. Lightweight and quick to install, USF structural-plate bridge flooring is recommended for bituminous-surfaced roadways on bridges, viaducts, overpasses, and similar structures. Along with photographs of a highway bridge in various stages of construction, the bulletin includes complete engineering description and a drawing which details all component parts. Also listed are design data for H20 loading and complete specifications. — UNITED STEEL FABRICATORS, INC., WOOSTER, OHIO.

Residual-Chlorine Recorder — Broadside describes features and operation of the Trail Blazer residual-chlorine recorder. The bulletin explains what the recorder is, what it does, and how it works. Listed are four advantages claimed: Better chlorination control, permanent record of performance, closer checks on operating irregularities, and improved chlorine usage. The bulletin also contains information on installations in Houston, Chicago, and Washington, D. C. — WALLACE & TIERNAN, BOX 178, NEWARK 1, N. J.

Torque Converter for Diesels — Construction, operation, and applications of torque converters in combination with diesel engines is described in an interesting catalog recently made available. The catalog describes the "inside story" of the GM torque converter, and provides a detailed explanation of its operation and advantage. The catalog then lists particular applications of these units on tractors, off-the-highway vehicles, and with all types of excavators. Complete engineering data are provided by means of graphs, tables, and text.—DETROIT DIESEL ENGINE DIV., GENERAL MOTORS CORP., 13400 W. OUTER DRIVE, DETROIT 28, MICH.

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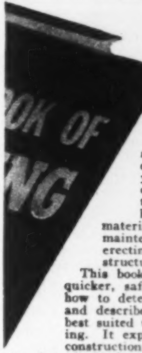

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PERSPECTIVE . . . . .

General at work

A supervisory engineering job on a port at Zonguldak, Turkey, is only an evolutionary step for a company that started out to build coke ovens, 42 years. Its a step prompted by a sort of hard-headed sentimentalism — but evolutionary just the same.

At least, that's how it looks to executives of the Koppers Company Inc., of Pittsburgh, and to its hard-driving leader, four-star General Brehon Somervell, late of the Army's Service of Supply and Corps of Engineers.

But you don't go from Heinrich Kopper's first coke ovens at Joliet, Ill., in 1908, to Zonguldak—or even to a $70,000,000 steel mill for Pacific Steel Co. in Chile—in one jump. And to see what a general can do, you don't start at the end of the story, either.

From German-born Dr. Koppers' first patents on coke ovens, the company grew in somewhat ungainly bounds. It made side-excursions into related problems. It built up a loose organization that now produces a line of 226 products which spans the alphabet from Acenapthene through to Xylol.

• **Coal is key**—If somewhat awkward, the growth was always logical, and the keystone was always coal.

It's simple enough: You start with a patented coke-oven to convert coal to hot-burning coke for steelmaking. The oven gives you certain residue—tar—which poses a disposal problem. So you get your chemists to work and they come up with creosote.

Creosote is a fine wood-preserver. So you build a plant to treat lumber for railroad ties, piles. This gets you into the lumber business. You also get oils that can be made into plastics, into synthetic rubber, into various other organic chemicals. So you build a laboratory; you build plants to manufacture the stuff; you invent new uses; you build a marketing organization.

In the course of this, you get into some odd places. So today, for instance, Koppers is making things like gas machinery, roofing materials, metal doors and parts for coke ovens—all of which are a long way from (though they still have a distinct tie to) handling coal.

• **Enter Somervell**—Into this welter of detail and product, in 1947, stepped Somervell, fresh from 33 years with the Army's Corps of Engineers, wartime service as head of the Services of Supply—whose motto "The difficult we do at once; the impossible takes a little longer" had become a by-word.

The first job seemed clear enough: Organization of the loosely tied company into a sense-making whole, with an over-riding top command.

Result: Six operating divisions (which constitute "the line") doing actual production and distribution; a "staff" composed of the non-operating departments—public relations, finance, law.

It's looser by far than a military command—but it has achieved unified control and operation. (See Box, p. 12 for more on this.)

• **Engineering work**—Over its whole history, the company has engaged in a "customer service" sort of engineering. It started out by designing ovens, then found it could do better at building them than could general contractors. Since it dealt with coal, its engineers became very familiar with mining and processing; because its ovens were the heart of the steelmaking process, the engineers had to know all about steel plants. Railroads supply steel mills—Koppers engineers had to know about trackage and bridges and ties. Coal is shipped by barge and boat—so Koppers learned about wharfage and dock construction.

For many years, then, Koppers built up an extensive engineering organization, to the point where it can and does offer a "packaged" engineering service. On request, it will design a steel mill, a gas utility, coal handling processes, chemical plant, build them, and turn them over in operating condition.

• **On to Zonguldak**—By 1949, the engineering division had reached a total of about 500 employees, and it could build anything up to and including major plant office buildings.

In that year, the government of Turkey decided to do something about its port of Zonguldak, on the Black Sea—a major shipping point for Turkish coal, but a sorry excuse for a harbor. Open to the prevailing winds, protected by a relatively tiny breakwater, with few facilities for ships, the port could be made into something, engineers said, for perhaps $50,000,000.

The Turks, with very incomplete data, took bids on harbor and mine developments. But everyone was bidding on his own plan and the bids weren't comparable. So, on the recommendation of Frederick Snare Corp., of New York (engaged to review the bids) the Turks rejected them all, paid for them, combined their best features into a much more specific "package" and asked bids again. A contract for about $9,000,000 has been awarded the Dutch firm of Netherlands Harborwork Co. Other bids are now being taken. Paul Weir Co., of Chicago, has been engaged to consult on the mechanical and mine work; Snare has been engaged on the harbor work.

The Turks remembered that, in 1936-1937, a Lieutenant Colonel Brehon B. Somervell had made an extensive economic survey of their country at the behest of the late president Mustafa Kemal.

They asked him to bid on the supervisory work—and he turned them down. But, at the insistence of the Turkish government, he sent Gen. T. M. Osborne to look over the job. "As long as he was there," says the Koppers boss, "we put in a bid—and we got the job."

This was a definite departure. This is no "package job" of building a steel mill or a processing plant. With Maj. Gen. J. C. Mehaffey (not long ago governor of the Panama Canal Zone) as its representative on the scene, Koppers will act as executive and supervisor for the Turkish government monopoly that controls the port; it will do all the inspections, see to it that proper materials and equipment are used; schedule the work.

Of course, the keystone is there —Zonguldak is a coal port.

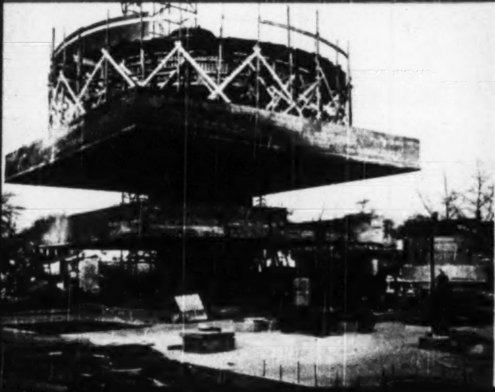
Why did Koppers take the job? Well, there's some sentiment in it. "But not much," says Somervell. "Hell, we get paid for it."

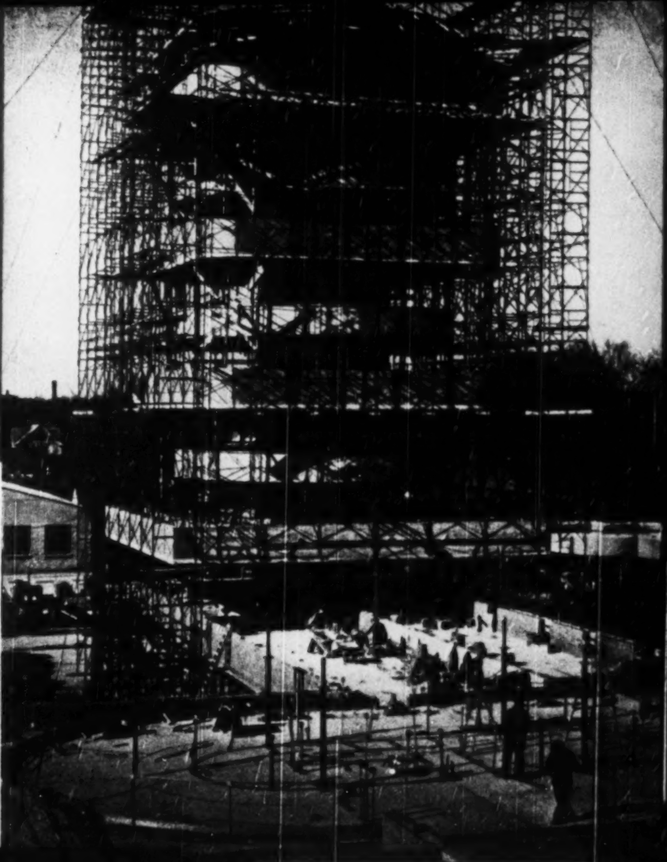
Does it mean that Koppers step out into the consulting field or general construction business?

"No," says Somervell, flatly. "We aren't going into the consulting field, nor the construction business, except where we're particularly fitted for it. In the main, that's in the field of coal."

It could be a move toward further diversification, but in the view of the company president, it's hard-headed business. "We'll go after business where we can and should," but we'll stick to our last."

POZZOLITH CONCRETE IN Ultra-Modern Research Tower





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